

BERHAMPUR UNIVERSITY

COURSE OF STUDIES

(CBCS PATTERN)

FOR

THE M.A. IN ECONOMICS EXAMINATIONS

SEMESTERS I & II EXAMINATIONS 2022- 2023

SEMESTERS III & IV EXAMINATIONS 2023- 2024



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**BERHAMPUR UNIVERSITY
BHANJA BIHAR
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Introduction

The Department of Economics was established in 1972 with two years Master Degree Course in Economics. In order to encourage research activities, the M. Phil. course was introduced in 1979-80. The department also offers Ph. D. programme under the supervision of the faculty members. Currently, the department is running under the headship of Prof. Sudhakar Patra, along with Dr. Mrutyunjay Swain, Associate Professor Dr, Bishnu Charan Behera, Mr. Pabitra Singh, Dr. Diptimayee Mishra and Dr. Bibhunandini Das. The department is providing value-based quality education by using ICT enabled facility, class room presentation and weekly seminar. The Department has an academic hall and two class rooms with LCD Projectors, faculty chambers, office room, head room, research scholar room, computer lab, seminar library etc.

Programme Outcome:

The Master of Arts programme in Economics has been designed with the objective to develop in-depth knowledge of students in frontier areas of economic theory and methods, so that they are able to use the knowledge to study real world economic problems.

The course has a strong focus on theoretical and quantitative skills and train students in the collection and analysis of the data using their software skills. The programme offers specialised optional courses, which allow student to pursue their studies in their area of interest. The students are required to submit report and present their findings of field-study. Besides, to hone the student's writing and analytical skills they are required to submit a term paper on current economic problem. Thus, the Masters in Economics programme seek to:

- Prepare students to develop critical thinking to carry out investigation about various socio-economic issues objectively while bridging the gap between theory and practice.

- Equip the student with skills to analyse problems, formulate an hypothesis, evaluate and validate results and draw reasonable conclusions thereof.
- Prepare students for pursuing research or careers that provide employment through entrepreneurship and innovative methods. Because today's unemployment problem can also be solved by developing the micro and small entrepreneurship
- Prepare students to develop own thinking /opinion regarding current national or international policies and issues
- Create awareness to become a rational and an enlightened citizen so that they can take the responsibility to spread the governments' initiatives/schemes to the rural areas for the upliftment of the poor or vulnerable section of the society for inclusive growth

Semester	Course	Name of the Paper	No. of Credits	Marks
SEMESTER – I				100 (80 End Semester +20 Mid Semester)
ECON C 101	Core	Microeconomic Analysis – I	04	-do-
ECON C 102	Core	Macroeconomic Analysis – I	04	-do-
ECON C 103	Core	Quantitative Methods – I	04	-do-
ECON C 104	Core	Public Economics – I	04	-do-
ECON C 105	Core	Economics of Growth and Development –I	04	-do-
Semester	Course	Name of the Paper	No. of Credits	Marks
SEMESTER – II				100 (80 End Semester +20 Mid Semester)
ECON C 201	Core	Microeconomic Analysis – II	04	-do-
ECON C 202	Core	Macroeconomic Analysis – II	04	-do-
ECON C 203	Core	Quantitative Methods – II	04	-do-
ECON C 204	Core	Public Economics – II	04	-do-
ECON C 205	Core	Economics of Growth and Development –II	04	-do-
ECON VAC 206	Value added	Computer Application in Economics	0	Grade
Semester	Core Course	Name of the Paper	No. of Credits	Marks
SEMESTER – III				100 (80 End Semester +20 Mid Semester)
ECON C 301	Core	International Trade and Finance – I	04	-do-
ECON C 302	Core	Economics of Social Sector and Environment	04	-do-
Group-A(One paper to be opted)				
ECON E 303	Elective	Mathematical Economics – I	04	-do-
ECON E 304	Elective	Industrial Economics – I	04	-do-
Group-B (One paper to be opted)				
ECON E 305	Elective	Econometrics – I	04	-do-

ECON E 306	Elective	Financial Institutions and Markets – I	04	-do-
ECON E 307	Elective	Agricultural Economics – I	04	-do-
Choice Based Credit Transfer (CBCT)				
ECON CT 300	CBCT	Contemporary Indian Economy	04	100 (80 End Semester +20 Mid Semester)
ECON VAC 308	Value added	Economic Issues and Policies in Odisha	0	Grade
Semester	Course	Name of the Paper	No. of Credits	Marks
SEMESTER – IV				100 (80 End Semester +20 Mid Semester)
ECON C 401	Core	International Trade and Finance – II	04	-do-
ECON C 402	Core	Research Methodology	04	-do-
ECON D 403	Core	Dissertation	04	100 (50-Thesis evaluation 50-Viva)
Group-A(One paper to be opted)				
ECON E 404	Elective	Mathematical Economics – II	04	100 (80 End Semester +20 Mid Semester)
ECON E 405	Elective	Industrial Economics – II	04	-do-
Group-B(One paper to be opted)				
ECON E 406	Elective	Econometrics – II	04	-do-
ECON E 407	Elective	Financial Institutions and Markets – II	04	-do-
ECON E 408	Elective	Agricultural Economics – II	04	-do-
ECON NC 409	Non-Credit	Cultural Heritage of South Odisha	0	-

Notes: (i) Each paper carries 100 marks, which includes 20 marks of Mid-Sem. examination and 80 marks of End-Sem. Examination.

(ii) Second unit in each paper shall be based on self-study followed by tutorial classes.

(iii) Abbreviations:

C	-	Core	1500 (Mandatory with no Choice)
E	-	Elective	400 (Mandatory with choice)
CT	-	Credit Transfer	100 (CBCT with inter-departmental choice)
VAC	-	Value added	
AC	-	Non-credit course	
D	-	Dissertation	

(iv) Other Details:

Course No.

Course Name: Master of Arts in Economics

Semester: I/II/III/IV.

Credits: 80

Core: 15 Papers and Elective: 07

Papers (AE-01, G[A]-03, G[B]-03, Students have to choose 2 papers from each group)

Course Coordinator: HOD, P.G Department of Economics

Email: headecobu@gmail.com

Expected Course Outcomes and Brief Description on Courses/Papers:

ECON C 101: Microeconomic Analysis – I		
<p>Course Outcome: The course will equip the students with the tools of micro economic fundamentals for a sound understanding of the behaviour of micro economic units like a rational consumer and the firms in various market structures. On successful completion of the course, a student will be able to develop a sound understanding of the core microeconomic concepts that economists use to understand the process of decision-making by an economic agent(s).</p>		
Unit	Contents	Hours
Unit-I	<p><i>Choice Theory and Consumer Demand</i> Consumer Preferences - Assumptions about Preferences; Utility Function-Basic concepts; Indifference Curve Analysis – Consumers Equilibrium; Marshallian and Hicksian demand functions; Decomposition of Price effect; Indirect Utility Function and Duality in consumption; Revealed Preference Theory; The Von-Neumann-Morgenstern axioms and expected utility theory.</p>	12
Unit-II	<p><i>Production and Costs</i> Fundamentals of Production function – Product Curves, Isoquants, Marginal rate of Technical Substitution; Short-run and Long-run laws of Production; Types of Production Function-Linear Homogenous, Leontief, Cobb-Douglas, CES, Non-homogeneous, Homothetic Production Functions. Profit maximization and Cost Minimisation; Cost function –Traditional and Modern Theories of Cost.</p>	12
Unit-III	<p><i>Monopoly and Monopolistic Competition</i> Monopoly – Profit Maximisation (Short-run and Long-run), Deadweight loss, Natural Monopoly, Measures of Monopoly Power, Control and Regulation; Discriminating Monopolist; Monopolistic Competition – Equilibrium of the firm and the group, Excess capacity.</p>	12
Unit-IV	<p><i>Oligopolistic Market Structure</i> Non-collusive – Cournot and Stackelberg Duopoly Models; Sweezy’s Small Group Oligopoly Model; Collusive – Cartels and Mergers, Market Share, Price Leadership Models; Differentiated Oligopoly, Non-price Competition.</p>	12
Total		48
<p>References: Baumol, W.J. (1982), Economic Theory and Operations Analysis, Prentice Hall of India, New Delhi. Broadway, R.W. and N.Bruce (1984). Welfare Economics, Basil Blackwell, London. Feldmen, A.M. (1980), Welfare Economics and Social Choice Theory Martinus Nijhoff Publishing, Boston. Graff, J. De V. (1957), Theoretical Welfare Economics, Cambridge University Press, Cambridge. Green, H.A.G. (1971), Consumer Theory, Penguin, Harmondsworth. Henderson, J.M. and R.E. Quandt (1980), Microeconomic Theory: A Mathematical Approach, Mc Graw Hill, New Delhi. Koutsoyiannis, A. (1979), Modern Microeconomics, (2nd Edition), Macmillan Press, London.</p>		

Kreps, David, M. (1990). A course in microeconomic theory Princeton university press.

Laidler David (1977). Introduction to microeconomics, Philip Allan Publishers.

Little, I.M.D. (1957), A Critique of Welfare Economics (second edition) Oxford University Press, London.

Nath, S.K. (1969), A Reappraisal of welfare economics, Routledge of Kegan Paul, London.

Pyndyck, R.S. & D.L. Rubinfeld (1999), Microeconomics, (3rd Edition) Pentice Hall of India.

Roychowudhury, K.C. (1980), Microeconomics, Tata Mc Graw Hill, New Delhi.

Sen, A.K. (1970), Collective Choice and Social Welfare, Holden Day Inc. San Fransico.

Stigler, G. (1996), Theory of Price, (4th Edition), Prentice Hall of India, New Delhi.

Varian, H. (2000), Microeconomics Analysis, W.W. Norton, New York.

Weintrub, E.R. (1974), General Equilibrium Theory, Macmillan, London.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON C 102: Macroeconomic Analysis – I		
<p>Course Outcome: This course will build the theoretical understanding of students on various macroeconomic thoughts starting from classical to contemporary Macroeconomics. It can improve the macroeconomic analytical skills from relevant policy perspective. The students will get an overview of the major developments in macroeconomic theory, with particular emphasis on the policy prescriptions of the earlier macroeconomic schools of thought. The students will learn to develop an understanding of the interrelationships among the various macroeconomic variables and the way they impact upon the working of the economy as a whole, thereby determining the course of the economy.</p>		
Unit	Contents	Hours
Unit-I	<p><i>National Income Accounts and Social Welfare</i> Different systems of national income accounting: Social accounting, Input-output accounting, Flow of funds accounting and Balance of Payments accounting; United Nations System of National Accounts (SNA); National income and social welfare, Measure of Economic Welfare (MEW)</p>	12
Unit-II	<p><i>Consumption Function</i> Keynes’ Psychological Law of Consumption: Implication of the law, Short-run and long-run consumption function, Empirical evidence on consumption function; Income-consumption relationship: Absolute income, Relative income, Life cycle and Permanent income hypotheses.</p>	12
Unit-III	<p><i>Investment function</i> Investment multiplier, Theories of investment and accelerator, Super multiplier, Influence of policy measures on investment.</p>	12
Unit-IV	<p><i>Demand for Money</i> Classical approach to demand for money: Quantity theory approach, Fisher’s equation, Cambridge quantity theory, Keynes’s liquidity preference approach: transaction, precautionary and speculative demand for money; Aggregate demand for money; Neo-classical and Keynesian views on interest.</p>	12
Total		48
<p>References: Ackley, G. (1978), Microeconomics : Theory and Policy, Macmillan, New York.</p>		

Branson, W.A. (1989), *Macroeconomic Theory and Policy*, (3rd Edition), Harper and Row, New York.

Dornbusch, R. and F. Stanley (1997), *Macroeconomics*, McGraw Hill, Inc, New York.

Duessenbery, J.S. (1949). *Income, saving and the theory of consumer behaviour*, Harvard University Press, Harvard.

Friedmen, M. (1956) *Studies in the quantity theory of money*, The University of Chicago Press, Chicago.

Frisch, H. (1993). *Theories of inflation*, Cambridge University Press, Cambridge.

Hicks, J.R. (1950). *A contribution to the theory of trade cycles*, clarendon press, Oxford.

Jha, R. (1999). *Contemporary Macroeconomics Theory and Policy*, New Age International (P) Ltd., New Delhi.

Keynes, J.M. (1936). *The General Theory of Employment, Interest and Money*, Macmillan, London.

Mckinen, G.E. (1978), *Money, The Price Level and Interest Rates*. Prentice Hall of India, New Delhi.

Shapiro, E. (1996), *Macroeconomic Analysis*, Galgotia Publications, New Delhi. Surrey, M.J.C. (Ed.) (1976), *Macroeconomic Themes*, Oxford University Press, Oxford.

Assessment: 100 (80 End Semester +20 Mid Semester)

ECON C 103: Quantitative Methods –I		
Course Outcome: This paper will enable the students to know different statistical and mathematical tools which are used to be applied by economists to solve various real-world problems.		
Unit	Contents	Hours
Unit-I	<i>Probability and Theoretical Distribution</i> Deterministic and non-deterministic experiments, various types of events, classical and empirical probability, Laws of addition and multiplication; conditional probability and concept of interdependence. Baye’s theorem and its applications; Elementary concept of random variable; Probability mass and density functions; Expectations, Properties of Binomial, Poisson and Normal distributions.	12
Unit-II	<i>Sampling and Estimation Theory</i> Basics of Sampling – Universe and Sample, Population Parameter and Sample Statistics, Sample size; Theory of Sampling distribution and Standard Error; Random and non-random sampling; Simple random, Stratified random and P.P.S. Sampling. Point Estimation and Interval Estimation, Desirable properties of an Estimator.	12
Unit-III	<i>Correlation and Regression analysis</i> Correlation – Simple, partial and multiple correlation (applications only); Multiple regression, partial regression coefficient, Estimation of regression coefficients in a multiple regression model; Standard error of regression coefficients, Goodness of fit of a regression model.	12
Unit-IV	<i>Testing of hypothesis and Computer Application</i> Null and alternative; Type-1 and Type-2 Errors, Goodness of fit; Confidence intervals and level of significance; Hypothesis testing based on Z, t, (Chi square) and F Tests.	12
Total		48

References: Allen, R.G.D. (1974), *Mathematical Analysis for Economics*, Macmillan Press and ELBS, London.

Chang, A.C. (1986), *Fundamental Methods of Mathematical Economics*, McGraw Hill, New York.

Croxton, Crowden and Klein (1971), *Applied General Statistics*, Prentice Hall of India, New Delhi.

Dowling, E.D. (1986). *Theory and Problems of Mathematics for Economists*, Schaum's Outline Series, McGraw Hill, New York.

Gupta, S.C. (1993), *Fundamentals of Applied Statistics*, S. Chand & Sons, New Delhi.

Gupta, S.P.(), *Statistical Methods*,

Kothari, C.R.(1992). *An Introduction to Operational Research*, Vikas Publishing House, New Delhi.

Monga, G.S.(1971), *Mathematical and Statistics for Economists*, Vikas Publishing House, New Delhi.

Taha, H.A. (1997), *Operations Research : An Introduction (6th Edition)*, Prentice Hall of India Pvt. Ltd., New Delhi.

Yamane, Taro (1975), *Statistics : An Introductory Analysis*, Harper & Row.

Yamane, Taro (1975), *Mathematics for Economists*, Prentice Hall of India, New Delhi.

Kerns (1993), *Essentials of Microsoft Windows, Word and Excel*, Prentice Hall of India, New Delhi.

Martin S. Matthew (1997), *Excel for Windows 95*, Tata McGraw Hill, New Delhi.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON C 104: Public Economics – I		
Course Outcome: This course is to familiarise the students with the concepts, principles and theories of Public economics. The students will understand about the public expenditure, public revenue, public finance, public budget and role of government, need for public provision of public goods, theory of taxation, theory of expenditure, Fiscal federal relations, fiscal policy instruments and their impact on macro economy.		
Unit	Contents	Hours
Unit-I	<i>Public expenditure and public debt</i> Public Expenditure–Hypotheses: Wagner's law of increasing state activities, Peacock-Wiseman hypothesis. Pure theory of public expenditure; Structure, growth and effect of public expenditure; Evaluation of public investment; Social Cost-benefit analysis – Project evaluation, Estimation of costs, discount rate, Public Debt– Sources, Effects, burden and it's management.	12
Unit-II	<i>Fiscal policy and budget</i> Fiscal policy– Objectives of fiscal policy, Neutral & compensatory and functional finance, Fiscal policy for stabilization-automatic vs. discretionary stabilization; inter-dependence of fiscal and monetary policies, The Public Budgets– Kinds of Budgets, Zero-base budgeting, Different concepts of budget deficit, Budgetary deficits and its implications, Balanced budget multiplier.	12

Unit-III	<i>Theories of Public Revenue</i> Public Revenue – Different Approaches to the division of tax burden, Incidence and effects of taxation, Elasticity and buoyancy; Taxable capacity; Benefit and ability to pay approaches; Theory of optimal taxation.	12
Unit-IV	<i>Indian Public Finance</i> Indian tax system, Trends in revenue and expenditure of the Central and State Government; Major taxes in India: base of taxes, direct and indirect taxes, taxation of agriculture, expenditure tax, Reforms in direct and indirect taxes, taxes on services, measuring progressivity and effect of taxation, Non-tax revenue of the center, State and local bodies; Analysis of the Union and state government budget, Trends in public debt, Fiscal crisis and fiscal sector reforms in India; Reports of Finance Commissions in India.	12
Total		48
<p>References: Atkinson, A.B. and J.E. Siglitz (1980), Lectures on Public Economics, Tata McGraw Hill, New York.</p> <p>Buchanan, J.M. (1970). The Public Finances; Richard D. Irwin, Homewood.</p> <p>Goode, R. (1986), Government Finance in Developing Countries, Tata McGraw Hill, New Delhi.</p> <p>Musgrave, R.A.(1959), The Theory of Public Finance, Tata McGraw Hill, Kogakhusa, Tokyo.</p> <p>Musgrave, R.A. and P.B.Musgrave (1976). Public Finance in theory and Practice, McGraw Hill, Kogakusha, Tokyo.</p> <p>Herber, B.P. (1967), Modern Public Finance, Richard D. Irwin, Homewood.</p> <p>Mueller, D.C.(1979) Public Choice, Cambridge University Press, Cambridge.</p> <p>Duff, L. (1997), Government and Market, Orient Longman, New Delhi.</p> <p>Mishan, E.J. (1982), Cost Benefit Analysis : An informal Introduction George Allen and Unwin, London.</p> <p>Bird, R. and O.Oldman (1967), Readings on Taxation in Developing Countries, the John Hopkins University Press, Baltimore.</p> <p>Musgrave, R.A. and C. Shoup (Eds.) (1970), “Readings in the Economics of Taxation”, George Allen and Unwin, London.</p> <p>Barman, K. (1986). Public Debt Management in India, Uppal Publishing House, New Delhi.</p> <p>Sreekantaradhya, B.S. (1972), Public Debt and Economic Development in India, New Delhi.</p> <p>Peacock, A. and G.K. Shaw (1976), The Economic Theory of Fiscal Policy, George Allen and Unwin, London.</p> <p>Chelliah, Raja J. et al. (1981), Trends and Issues in India’s Federal Finance, National Institute of Public Finance and Policy, New Delhi.</p> <p>Musgrave, R.A. (1977), Essays in Fiscal Federalism, Greenwood West Port.</p> <p>Oates, W.E. (1972), Fiscal Federalism, Harcourt Brace and Johanowich, New Delhi.</p> <p>Srivastava, D.K. (Ed.) (2000). Fiscal Federalism in India, Har-Anand Publications Ltd., New Delhi.</p> <p>Bhargava, P.K. (1984), Some Aspects of Indian Public Finances, Uppal Publishing House, New Delhi.</p>		

Government of India (1992), Reports of the Tax Reforms Committee – Interim and Final (Chairman: Raja J. Chelliah).
Mundle, S. (1999), Public Finance Policy: Issues for India, Oxford University Press, New Delhi.
Assessment: 100 (80 End Semester +20 Mid Semester)

ECON C 105: Economics of Growth and Development – I		
Course Outcome: The course will explore the concepts and theories of Development Economics with an aim to develop the research capabilities of the students.		
Unit	Contents	Hours
Unit-I	<i>Economic Growth</i> Economic growth versus Economic development; Exogenous Growth Models – Harrod and Domar growth model and it's instability in equilibrium; Solow Model; Meade's Steady State Growth Model; Kaldor's Model; Romer's Endogenous growth model.	12
Unit-II	<i>Social Aspects of Development</i> Poverty and Inequality – Indicators and Measurement of Poverty and Inequality; Food Security and Nutrition; Human Capital – Human Development Index and Quality of Life Index; Role of Education and Health in Development; Theory of Demographic Transition, Optimum Theory of Population, Measurement of fertility– Total fertility rate, gross and net reproduction rate.	12
Unit-III	<i>Investment Techniques</i> Investment criteria and choice of technique– Capital Turnover Criterion, SMP Criterion, Marginal Per Capita Reinvestment criterion, Labour versus capital intensive techniques.	12
Unit-IV	<i>Planning Techniques</i> Planning techniques–Project evaluation and the Cost-benefit analysis; Linear programming and shadow pricing; Planning in a Market Oriented Economy.	12
Total		48
<p>References: Higgins, B.(1959), Economic Development, W.W.Nortorn, New York. Kindleberger, C.P. (1977), Economic Development, (3rd Edition), McGraw Hill, New York. Meier, G.M.(1995), Leading Issues in Economics Development, (6th Edition), Oxford University Press, New Delhi. Myint, Hla (1965), The Economics of Underdeveloped Countries, Preager, New York. Myint, H. (1971), Economic Theory and Underdeveloped Countries, Oxford University Press, New York. Todaro, M.P. (1996), (6th Edition), Economic Development, Longman, London. Thirlwal, A.P. (1999), (6th Edition). Growth and Development, Macmillan, U.K. Sen, A.K. (Ed.), (1990), Growth Economics, Penguin, Harmondsworth. Lewis, W.A. (1955), The Theory of Economic Growth, George Allen and Unwin, London. Myrdal, G. (1957), Economic Theory and Underdeveloped Regions, Duckworth, London. Schumpeter, J.A.(1949), The Theory of Economic Development, Harvard University Press Cambridge, Mass. United Nations (1994), Human Development Report, United Nations, New York. A.G.Frank, On Capitalist Underdevelopment, Monthly Review Press.</p>		

Bhagwati, J. & P. Desai (1970), India : Planning for Industrialization, Oxford University Press, London.
 Todaro, M.P. (1971), Development Planning: Models and Methods, Oxford University Press, Oxford.
 Chakravarti, S. (1987), Development Planning: The Indian Experience, Clarendon Press, Oxford.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON C 201:Microeconomic Analysis – II		
Course Outcome: The course will be helpful to the students to know about the managerial and behavioural theories of the firm, Theory of Distribution, General Equilibrium Analysis and welfare economics.		
Unit	Contents	Hours
Unit-I	<i>Managerial and Behavioural Theories of the Firm</i> The Marginalist Controversy; A Representative Model of Average Cost Pricing; Bain’s Limiting Price Theory; Theory of Sales Revenue Maximization; Marris’s and William’s Static Managerial Model of the Firm.	12
Unit-II	<i>Theory of Distribution</i> Neo-classical Approach – Marginal productivity theory; The Adding-up problem- Product Exhaustion Theorem; Factor Pricing in Perfect and Imperfect Markets.	12
Unit-III	<i>General Equilibrium Analysis</i> Partial vs General Equilibrium; Existence, Stability and Uniqueness of Competitive equilibria; Efficiency in Production, Consumption and Product mix - A 2×2×2 General Equilibrium Model.	12
Unit-IV	<i>Welfare Economics</i> Pigovian Welfare Economics; Pareto Optimality Conditions; Compensation Principle, Bergson-Samuelson’s Social Welfare Function; Theory of Second Best; Arrow's Impossibility Theorem; The theory of Social Choice.	12
Total		48
<p>References: Baumol, W.J. (1982), Economic Theory and Operations Analysis, Prentice Hall of India, New Delhi.</p> <p>Broadway, R.W. and N.Bruce (1984). Welfare Economics, Basil Blackwell, London.</p> <p>Feldmen, A.M. (1980), Welfare Economics and Social Choice Theory Martinus Nijhoff Publishing, Boston.</p> <p>Graff, J. De V. (1957), Theoretical Welfare Economics, Cambridge University Press, Cambridge.</p> <p>Green, H.A.G. (1971), Consumer Theory, Penguin, Harmondsworth.</p> <p>Henderson, J.M. and R.E. Quandt (1980), Microeconomic Theory: A Mathematical Approach, Mc Graw Hill, New Delhi.</p> <p>Koutsoyiannis, A. (1979), Modern Microeconomics, (2nd Edition), Macmillan Press, London.</p> <p>Kreps, David, M. (1990). A course in microeconomic theory Princeton university press.</p> <p>Laidler David (1977). Introduction to microeconomics, Philip Allan Publishers.</p> <p>Little, I.M.D. (1957), A Critique of Welfare Economics (second edition) Oxford University Press, London.</p>		

Nath, S.K. (1969), A Reappraisal of welfare economics, Routledge of Kegan Paul, London.

Pyndyck, R.S. & D.L. Rubinfeld (1999), Microeconomics, (3rd Edition) Pentice Hall of India.

Roychowudhury, K.C. (1980), Microeconomics, Tata Mc Graw Hill, New Delhi.

Sen, A.K. (1970), Collective Choice and Social Welfare, Holden Day Inc. San Fransico.

Stigler, G. (1996), Theory of Price, (4th Edition), Prentice Hall of India, New Delhi.

Varian, H. (2000), Microeconomics Analysis, W.W. Norton, New York.

Weintrub, E.R. (1974), General Equilibrium Theory, Macmillan, London.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON C 202: Macroeconomic Analysis – II		
Course Outcome: This course will create the theoretical understanding of students from classical to contemporary macroeconomics. It will improve the macroeconomic analytical skills from relevant policy perspectives.		
Unit	Contents	Hours
Unit-I	<i>The IS-LM and Post-Keynesian approaches</i> The IS-LM model; Extension of IS-LM model with labour market and flexible price; General equilibrium of product and money market; Post-Keynesian approaches to demand for money; Patinkin and the Real Balance Effect; Friedman and the modern quantity theory; Monetarism vs. Fiscalism.	12
Unit-II	<i>Supply of money</i> Components and determinants of money supply; Factors influencing changes in money supply; Financial Intermediation, Growth and role of Non-Banking Financial Intermediaries (NBFIs) and Regional Rural Banks, Distinction between Banks and NBFIs; RBI approach to money supply; High powered money and money multiplier.	12
Unit-III	<i>Theory of Inflation</i> Inflation: Theories of inflation; Structuralist approach to inflation; Philip curve analysis, Short-run and long-run Philips curve, Tobin’s modified Phillips curve; Policies to control inflation.	12
Unit-IV	<i>Theories of Business Cycles</i> Business cycles: Theories of business cycles – Schumpeter, Kaldor, Samuelson and Hicks; Macro-economic equilibrium – relative roles of monetary fiscal policies.	12
Total		48
References: Ackley, G. (1978), Microeconomics: Theory and Policy, Macmillan, New York.		
Branson, W.A. (1989), Macroeconomic Theory and Policy, (3 rd Edition), Harper and Row, New York.		
Dornbusch, R. and F. Stanley (1997), Macroeconomics, McGraw Hill, Inc, New York.		
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Frisch, H. (1993). Theories of inflation, Cambridge University Press, Cambridge.		
Hicks, J.R. (1950). A contribution to the theory of trade cycles, clarendon press, Oxford.		
Jha, R. (1999). Contemporary Macroeconomics Theory and Policy, New Age International		

(P) Ltd., New Delhi.
Keynes, J.M. (1936). The General Theory of Employment, Interest and Money, Macmillan, London.
Mckinen, G.E. (1978), Money, The Price Level and Interest Rates. Prentice Hall of India, New Delhi.
Shapiro, E. (1996), Macroeconomic Analysis, Galgotia Publications, New Delhi. Surrey, M.J.C. (Ed.) (1976), Macroeconomic Themes, Oxford University Press, Oxford.
Assessment : 100 (80 End Semester +20 Mid Semester)

ECON C 203: Quantitative Methods –II		
Course Outcome: This paper will enable the students to know about different statistical and mathematical tools which are routinely being applied by economists to solve various real world problems.		
Unit	Contents	Hours
Unit-I	<i>Functions and Derivatives in Economics</i> Function and type of Functions and their Applications in Economics; Simple Derivative and Differential (both first and second order) and their applications in Economics; Partial Derivatives, Total Derivative and Total Differential and their applications in Economics; Unconstrained and Constrained Optimization of multivariate functions and their application in simple economic problems.	12
Unit-II	<i>Matrices and Determinants</i> Matrix – Concept of matrix and types of matrices, Operations on matrices, matrix inversion and rank of a matrix, Concept of quadratic forms, Eigen roots and Eigen vectors of matrices. Determinant and it's properties. Simple application of vectors, matrices and determinants– Solution of simultaneous equations.	12
Unit-III	<i>Integration, Differential and Difference Equations</i> Integration and its geometrical interpretation, Methods of integration, Application of integration–Consumer's Surplus and Producer's Surplus; Differential equations – Solution of first order and second order difference equations, their simple applications in economics.	12
Unit-IV	<i>Elementary Operations Research and Computer Application</i> Linear programming – formulation of linear programming and it's graphical method of solution, input-output analysis – determination of equilibrium level of outputs, prices and employment; Game Theory – Concept the game, solution of game with saddle point and mixed strategies and value of a game.	12
Total		48
References: Allen, R.G.D. (1974), Mathematical Analysis for Economics, Macmillan Press and ELBS, London.		
Chang, A.C. (1986), Fundamental Methods of Mathematical Economics, McGraw Hill, New York.		
Croxtton , Crowden and Klein (1971), Applied General Statistics, Prentice Hall of India, New Delhi.		

Dowling, E.D. (1986). Theory and Problems of Mathematics for Economists, Schaum's Outline Series, McGraw Hill, New York.

Gupta, S.C. (1993), Fundamentals of Applied Statistics, S. Chand & Sons, New Delhi.

Gupta, S.P.(), Statistical Methods,

Kothari, C.R.(1992). An Introduction to Operational Research, Vikas Publishing House, New Delhi.

Monga, G.S.(1971), Mathematical and Statistics for Economists, Vikas Publishing House, New Delhi.

Taha, H.A. (1997), Operations Research : An Introduction (6th Edition), Prentice Hall of India Pvt. Ltd., New Delhi.

Yamane, Taro (1975), Statistics : An Introductory Analysis, Harper & Row.

Yamane, Taro (1975), Mathematics for Economists, Prentice Hall of India, New Delhi.

Kerns (1993), Essentials of Microsoft Windows, Word and Excel, Prentice Hall of India, New Delhi.

Martin S. Matthew (1997), Excel for Windows 95, Tata McGraw Hill, New Delhi.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON C 204: Public Economics – II		
Course Outcome: This will help the students to understand about the role of public sector, preference revelation for public goods, rationale for public policy and fiscal federalism. The students will understand about the public expenditure, public revenue, public finance, public budget and role of government, need for public provision of public goods, theory of taxation, theory of expenditure, Fiscal federal relations, fiscal policy instruments and their impact on macro economy.		
Unit	Contents	Hours
Unit-I	<i>Role of Public sector</i> Role of Government in organized society; Changing perspective of government in a mixed economy, public and private sector cooperation or competition, Government as an agent for economic planning and development; Government as a tool of operationalising the planning process, private goods, public goods and merit goods.	12
Unit-II	<i>Preference Revelation for Public Goods.</i> Market failure: Imperfections decreasing costs, externalities, public goods; Private and public mechanism for allocating resources; Problems for allocating resources; Problems of preference revelation and aggregation of preferences; An economic theory of democracy, Role of bureaucracy. Free rider problem, median voter theorem, theory of rent seeking.	12
Unit-III	<i>Rationale for Public Policy</i> Allocation of resources – Theory of public goods, Voluntary exchange models, Impossibility of decentralized provision of public goods ;contributions of Lindahal and Johansen; Samuelson; Demand revealing schemes for public goods – Tiebout model, Theory of club goods, Stabilization policy – Keynesian case for stabilization policy. Uncertainty and expectations, Failure of Intertemporal markets, Liquidity preference, social goals, poverty alleviation, Provision of infrastructural facilities, Removing distributional inequalities and regional imbalances.	12

Unit-IV	<i>Fiscal Federalism</i> Fiscal Federalism. Principles of multi-unit finance; Fiscal federalism in India. Vertical and horizontal imbalance. Assignment of function and sources of revenue, constitutional provisions, finance commission and planning commission, devolution of resources and grants. Theory of grants. Resource transfer from union to states – Criteria for transfer of resources; center – State financial relations in India. Problems of states resources and indebtedness, transfer of resources from union and states to local bodies.	12
Total		48
<p>References: Atkinson, A.B. and J.E. Siglitz (1980), Lectures on Public Economics, Tata McGraw Hill, New York.</p> <p>Aurebach, A. and Feldstein, M., Handbook of Public Economics, Vol. 3, North Holland, 2002</p> <p>Buchanan, J.M. (1970). The Public Finances; Richard D. Irwin, Homewood.</p> <p>Bird, R. and O.Oldman (1967), Readings on Taxation in Developing Countries, the John Hopkins University Press, Baltimore.</p> <p>Barman, K. (1986). Public Debt Management in India, Uppal Publishing House, New Delhi.</p> <p>Bhargava, P.K. (1984), Some Aspects of Indian Public Finances, Uppal Publishing House, New Delhi.</p> <p>Boadway, Public Sector Economics, Cambridge University Press, 1979</p> <p>Chelliah, Raja J. et al. (1981), Trends and Issues in India's Federal Finance, National Institute of Public Finance and Policy, New Delhi.</p> <p>Duff, L. (1997), Government and Market, Orient Longman, New Delhi.</p> <p>Goode, R. (1986), Government Finance in Developing Countries, Tata McGraw Hill, New Delhi.</p> <p>Government of India (1992), Reports of the Tax Reforms Committee – Interim and Final (Chairman : Raja J. Chelliah).</p> <p>Govinda Rao M. and T. K. Sen, Fiscal Federalism in India: Theory and Practice, 1996</p> <p>Herber, B.P. (1967), Modern Public Finance, Richard D. Irwin, Homewood.</p> <p>Hillman A. L., Public Finance and Public Policy, Cambridge University Press, 2003</p> <p>Musgrave, R.A.(1959), The Theory of Public Finance, Tata McGraw Hill, Kogakhusa, Tokyo.</p> <p>Musgrave, R.A. and P.B.Musgrave (1976). Public Finance in theory and Practice, McGraw Hill, Kogakusha, Tokyo.</p> <p>Mueller, D.C.(1979) Public Choice, Cambridge University Press, Cambridge.</p> <p>Mishan, E.J. (1982), Cost Benefit Analysis : An informal Introduction George Allen and Unwin, London.</p> <p>Musgrave, R.A. and C. Shoup (Eds.) (1970), "Readings in the Economics of Taxation", George Allen and Unwin, London.</p> <p>Musgrave, R.A. (1977), Essays in Fiscal Federalism, Greenwood West Port.</p> <p>Mundle, S. (1999), Public Finance Policy : Issues for India, Oxford University Press, New Delhi.</p> <p>Oates, W.E. (1972), Fiscal Federalism, Harcourt Brace and Johanowich, New Delhi.</p> <p>Peacock, A. and G.K. Shaw (1976), The Economic Theory of Fiscal Policy, George Allen and Unwin, London.</p> <p>Richard , A Musgrave and P.B. Musgrave, Public finance in Theory and Practice, McGraw Hill, 1989.</p>		
Assessment: 100 (80 End Semester +20 Mid Semester)		

ECON C 205: Economics of Growth and Development – II		
Course Outcome: The course will explore the concepts and theories of Development Economics with an aim to develop the research capabilities of the students.		
Unit	Contents	Hours
Unit-I	<i>Approaches to Development-I</i> Partial theories of growth and development – Vicious circles of Poverty, Circular Causation; Development Theories – Classical, Marx and Schumpeter theories of development; Unlimited supply of labour; Big push; Balanced and Unbalanced growth.	12
Unit-II	<i>Approaches to Development-II</i> Critical Minimum Effort Thesis; Low-income Equilibrium Trap; Forward and Backward Linkage; Ranis & Fei model; Dependency theory of development.	12
Unit-III	<i>Sectoral Aspects of Development</i> Role of agriculture in economic development; Efficiency and productivity in agriculture; New technology and sustainable agriculture; Globalization and agricultural growth; Rationale and Pattern of Industrialization in developing countries; Terms of trade between agriculture and industry; Infrastructure and its importance.	12
Unit-IV	<i>Macroeconomic Policies</i> Macroeconomic policies and development – Role of monetary and Fiscal policies in developing countries - Prior savings, Inflation and growth; External resources – FDI, AIDs and Technology inflow; MNC activity in developing countries.	12
Total		48
<p>References: Higgins, B.(1959), Economic Development, W.W.Norton, New York. Kindlegerger, C.P. (1977), Economic Development, (3rd Edition), McGraw Hill, New York. Meier, G.M.(1995), Leading Issues in Economics Development, (6th Edition), Oxford University Press, New Delhi. Myint, Hla (1965), The Economics of Underdeveloped Countries, Preager, New York. Myint, H. (1971), Economic Theory and Underdeveloped Countries, Oxford University Press, New York. Todaro, M.P. (1996), (6th Edition), Economic Development, Longman, London. Thirlwal, A.P. (1999), (6th Edition). Growth and Development, Macmillan, U.K. Sen, A.K. (Ed.), (1990), Growth Economics, Penguin, Harmondsworth. Lewis, W.A. (1955), The Theory of Economic Growth, George Allen and Unwin, London. Myrdal, G. (1957), Economic Theory and Underdeveloped Regions, Duckworth, London. Schumpeter, J.A.(1949), The Theory of Economic Development, Harvard University Press Cambridge, Mass. United Nations (1994), Human Development Report, United Nations, New York. A.G.Frank, On Capitalist Underdevelopment, Monthly Review Press. Bhagwati, J. & P. Desai (1970), India : Planning for Industrialization, Oxford University Press, London.</p>		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON VAC 206: Computer Application in Economics		
Course Outcome: The students can able to understand applications of different statistical packages for Economic analysis and can conduct the statistical analysis on economic problems.		
Unit	Contents	Hours
Unit-I	<i>Basic Concepts</i> MS Excel Spread sheet - Concept and use of spread sheet, Structure of a spread sheet, Spread in-built functions, Chart feature of a spread sheet, Operation and Use of MS-Excel.	12
Unit-II	<i>Statistical Data Processing Techniques-I</i> Statistical Package handling and command description of Statistical Package for Social Science (SPSS) and R; Basic statistical and econometric functions and their analysis.	12
Unit-III	<i>Statistical Data Processing Techniques-II</i> Use of statistical packages such as SPSS, Excel and R in frequency distribution, correlation and regression analysis; Use of statistical packages in for Hypothesis testing based on Z, t, (Chi square) and F Tests.	
Unit-IV	<i>Statistical Data Processing Techniques-III</i> Use of statistical packages such as SPSS, Excel and R for Analysis of Variance (ANOVA), Analysis of Covariance (ANCOVA), Linear programming; Time Series Trend Analysis; Input-output Analysis,	12
Total		48
References: Balguruswamy, E. (1997), Programming in Basic, Tata McGraw Hill, New Delhi. Byron S. Gottfried (1997); Programming with Basic, Schaum's Cutline Series, McGraw Hill, New York. Jaggi, V.P. and Jain, Sushma (1994), Computers for Beginners. Academic Press, New Delhi. Jaggi, V.P. and Jain, Sushma (1994), Basic for Beginners, Academic Press, New Delhi. Kerns (1993), Essentials of Microsoft Windows, Word and Excel, Prentice Hall of India, New Delhi. Martin S. Matthew (1997), Excel for Windows 95, Tata McGraw Hill, New Delhi. Ram, B. (1997), Computer Fundamentals, Second Edition, New Age International, New Delhi. Tom Sheldon (1997), Windows 95 Made Easy, Tata McGraw Hill, New Delhi.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON C 301: International Trade and Finance – I		
Course Outcome: This course will help the students to understanding of theories of international trade, gains from trade and intervention in trade. This will help the students to improve their analytical skills and they can relate with current trade situation.		
Unit	Contents	Hours
Unit-I	<i>Theory of International Trade-I</i> The pure theory of international trade – Theories of absolute advantage, comparative advantage and opportunity costs; Empirical testing of classical theory; Trade equilibrium under constant, increasing and diminishing cost conditions, and imperfect competition.	12
Unit-II	<i>Theory of International Trade-II</i> Heckscher–Ohlin theory of trade, Leontief paradox, Theorem of factor price equalization, Stolper–Samuelson theorem, Rybczynski theorem, Kravis and Linder theorem of trade. Technological change and international trade. .	12
Unit-III	<i>Gains from trade</i> Gains from trade: their measurement and distribution; Concept of terms of	12

	trade, their uses and limitations; Hypothesis of secular deterioration of terms of trade, its empirical relevance and policy implications for less developed countries; Terms of trade and income distribution; Trade as an engine of economic growth; Concept and policy implications of immiserising growth.	
Unit-IV	<i>Interventions in trade</i> Theory of interventions: Tariffs, Quotas and Non-tariff barriers; Effects of tariffs under partial and general equilibrium perspectives; Tariff and income distribution; Optimum tariff; Dumping - Forms of Dumping – Antidumping and International Price Discrimination. Metzler Paradox; Effective. Rate of protection Types of regional economic integration; Theory of customs union: Viner’s partial equilibrium approach to welfare effects of customs union; General equilibrium analysis of customs union – Lipsey model and Vanek model; Empirical findings and dynamic considerations of customs union and free trade area.	12
Total		48
References:		
Bhagwati , J. (Ed.)(1981), International Trade, Selected Readings, Cambridge, University Press, Massachusetts.		
Carbough, R.J. (1999), International Economics, International Thompson Publishing, New York.		
Chacholiades, M.(1990), International Trade : Theory and Policy, McGraw Hill, Kogakusha, Japan.		
Dunn, R.M. and J.H. Mutti (2000), International Economics, Routledge, London. Kenen, P.B.(1994), The International Economy, Cambridge University Press, London. Kindleberger, C.P. (1973), International Economics, R.D.Irwin, Homewood.		
Krugman, P.R. and M.Obstfeld (1994), International Economics : Theory and Policy, Glenview, Foreman.		
Salvatore, D. (1997), International Economics, Prentice Hall, Upper Saddle River, N. J., New York.		
Soderston, Bo (1991), International Economics, The Macmillan Press Ltd., London.		
Nichans, J. (1984), International Monetary Economics. John Hopkins University Press, Baltimore.		
Yeager, L.B. (1976), International Monetary Relations, Theory, History and Policy, Harper and Row, New York.		
Aggarwala, M.R. (1979), Regional Economic Cooperation in South Asia, S. Chand and Co., New Delhi.		
Brahmananda, P.R. (1982), The IMF loan and India’s Economic Future, Himalaya Publishing House, Bombay.		
Kenen, P.B. (1995), Economic and Monetary Union in Europe, Cambridge University Press, U.K.		
Kindleberger, C.P. (1996). A History of Financial Crisis : Manias, Panics and Crashes, (3 rd Edition), John Wiley and Sons, New York.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON C 302: Economics of Social Sector and Environment		
Course Outcome: This course enables the students to have an idea on resources and environmental economics, and environmental policy and regulation in India. It will help students understand the link between environment, education and health.		
Unit	Contents	Hours
Unit-I	<i>Economics of Environmental Policy</i> Environmental externalities and market inefficiency – Environmental taxes and subsidies; Marketable pollution permit; Deposit refund system; Coase’s property rights and bargaining solution; Command and control approach; Comparison of regulations and markets-based instruments; Global environmental externalities; Climate change and carbon tax; Trade and environment. Porter’s hypothesis, Pollution havens hypothesis.	12
Unit-II	<i>Environmental Regulation and Natural Resource Management in India</i> Mechanism for environmental regulation in India; Environmental laws and their implementation; Policy instruments for controlling water and air pollution; Forest policy; People’s participation in the management of common property resources; Joint Forest Management; Social forestry – rationale and benefit.	12
Unit-III	<i>Economics of Education</i> Education as an instrument for economic growth; Human capital vs. physical capital; Demand for education – private and social demand; Cost of education, wastage and stagnation benefits of education – direct and indirect benefits, private and social benefits.	12
Unit-IV	<i>Economics of Health</i> Health Dimension of development; Determinants of health – poverty, malnutrition and environmental issues. Economic dimensions of health care – Demand and supply of health care; The concept of Burden of Disease; Institutional issues in health care delivery in India.	12
Total		48
References: Baumol, W.J. and W.E. Oates (1988); The Theory of Environmental Policy, (2 nd Edition), Cambridge University Press, Cambridge. Berman, P. (Ed.) (1995). Health Sector Reform in Developing Countries: Making Health Development Sustainable, Boston: Harvard Series on Population and International Health. Blaug, M. (1972), Introduction to Economics of Education, Penguin, London. Bromely, D.W.(Ed.) (1995), Handbook of Environment Economics, Blackwell, London. Cohn, E. and T.Gaske (1989), Economics of Education, Pergamon Press, London. Fisher, A.C. (1981), Resource and Environmental Economics, Cambridge University Press, Cambridge. Hanley, N.J.F. Shogern and B.White (1997), Environmental Economics in Theory and Practice, Macmillan. Jeroen, C. J. M. and Van Den Bergh (1999), Handbook of Environmental and Resource Economics, Edward Elgar Publishing Ltd., U.K. Common, M. (1998), Environmental and Resource Economics, Longman, London. Jarrett, H. (1966), Environmental Quality in a Growing Economy, Johns Hopkins, Baltimore.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON E 303: Mathematical Economics – I

Course Outcome: The course will create an understanding of the students to know the use of mathematical principle. It will make learners to know the consumer and producer behaviour, and their application in economics.

Unit	Contents	Hours
Unit-I	<i>Consumer Behaviour</i> Utility Function: Basic concepts, Cardinal and Ordinal measure of utility; Utility maximization; Ordinary and Compensated demand functions; Derivation of Slutsky Equation, Price and income elasticities of demand and the nature of commodities, The Linear expenditure system, Duality Theorems– Direct and Indirect Utility function duality, Roy’s Identity; Theory of revealed preference; Consumer behaviour under risk and uncertainty.	12
Unit-II	<i>Production, Cost and the Firm</i> Production Function: Basic Concepts, Elasticity of Substitution, Properties of Homogeneous, Cobb-Douglas (CD), CES Production Function; Optimization Behaviour of the firm– Constrained output maximisation and cost minimisation; Unconstrained profit maximisation; Derivation of Input demand functions; Optimization Behaviour of multi-product firm – Constrained revenue maximisation and Unconstrained profit maximisation; Duality in production– Production and Cost function Duality, Derivation of short-run and long-run cost functions.	12
Unit-III	<i>Perfect Competition, Monopoly and Monopolistic Market Structures</i> Equilibrium of a Firm under perfect competition; Short-run and Long-run equilibrium of a Monopoly Firm; Discriminating Monopoly; Equilibrium of a Multiplant Monopoly; Price and output determination under Monopolistic Competition in the Short-run and Long-run.	12
Unit-IV	<i>Oligopolistic Market Structure</i> Non-collusive and Collusive Duopoly and Oligopoly: Non-collusive Models – Cournot, Stackelberg and Kinked Demand Curve Models; Collusive Models – Cartels and Mergers, Market Share, Price Leadership Models; Factor pricing under Bilateral monopoly.	12
Total		48

References:

Allen, R.G.D. (1976), *Mathematical Economics*, Macmillan, London.

Henderson, J.M. and R.E.Quandt (1990), *Microeconomics Theory: A Mathematical Approach* McGraw Hill, New Delhi.

Ferguson, C.E.(1976), *Neo-classical Theory of Production and Distribution*.

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Chiang, A.C. (1986), *Fundamental Methods of Mathematical Economics*, McGraw Hill, New York.

Jha, R.(1991), *Contemporary Macroeconomic Theory and Policy*, Wiley Eastern Ltd., New Delhi.

Hadley, G. (1962), *Linear Programming*, Addison Wesley Publishing Co., Massachusetts.

Kothari, C.R. (1992), *An Introduction to Operations Research*, Vikas Publishing House, New Delhi.

Dorfman, R.P.A.Solow R.W. : *Linear Programming and Economics Analysis*, McGraw Hill.

Gillett, B.E. *Introduction to Operations Research*, McGraw Hill, New York.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON E 304: Industrial Economics-I		
Course Outcome: This course will provide an introduction to current theory and empirical work in Industrial economics.		
Unit	Contents	Hours
Unit-I	<i>Concept and Scope of industrial economics</i> Concept and Scope of industrial economics; Organisation of a firm: Ownership, control and objectives of the firm; Choice of the organizational form; Business motives of the firm.	12
Unit-II	<i>Industrial Location Theories</i> Analysis of industrial location–Determinants of industrial location; Approaches to industrial locational Analysis; Economic theories of industrial location: Weber’s Theory, Market Area Theory of Palander and Central Place Theory of Losch; Operational approaches to industrial location, Factors affecting location.	12
Unit-III	<i>Market Structure, Market Conduct and Profitability</i> Market structure: Standard forms of market structures, Sellers’ concentration; Product differentiation; Entry conditions. Profitability: Market structure and profitability: Determinants of profitability. Theory of profitability; Market structure and innovation: The theories of technological innovation.	12
Unit-IV	<i>Market Concentration and Market Performance</i> Market concentration: Theoretical issues; Measurement of market concentration and monopoly power; Extent of market concentration; Concentration and market performance of a firm. Market Performance: Growth of the firm; Conceptual framework for the theory of growth; Constraints on growth of the firm; Industrial Productivity and Efficiency; Measurement of Industrial efficiency; Some efficiency condition in production.	12
Total		48
References: Barthwal, R.R. (1985), Industrial Economics, Wiley Eastern Ltd., New Delhi. Desai, B. (1999), Industrial Economy in India (3 rd Edition), Himalaya Publishing House, Mumbai. Government of India, Economic Survey (Annual) Kuchhal, S.C. (1980), Industrial Economy of India (5 th Edition), Chaitanya Publishing House, Allahabad. Singh, A. and A.N.Sadhu (1988), Industrial Economics, Himalaya Publishing House, Bombay. Bagchi, A. and M. Banerjee (Eds.) (1979), Change and Choice in Indian Industry, Bagchi Publications, Calcutta. Kelkar, V.L. and V.V. Bhanoji Rao (Eds.) (1996), India Development Policy Imperatives, Tata McGraw Hill, New Delhi. Sandesara, J.C. (1992). Industrial Policy and Planning – 1994 – 1991 : Tendencies, Interpretations and Issues, Sage Publications, India Pvt. Ltd., New Delhi. Sandesara, J.C. (1982), Industrial Growth in India.		
Assessment: 100 (80 End Semester +20 Mid Semester)		

ECON E 305:Econometrics – I		
Course Outcome: The course will enable the students to learn the basic tools of econometric analysis. The students will understand the methods of econometric analysis and their application in empirical research.		
Unit	Contents	Hours
Unit-I	Basic Econometrics Nature, meaning and scope of econometrics; Simple linear regression model – Assumptions; OLS Estimation; Blue properties of OLS estimators and the Gauss-Markov theorem; Derivation of R ² ; Inference in the least-squares model, Analysis of variance and the least-squares model; Prediction in the least-squares model; Estimation of extension two variable linear regression model	12
Unit-II	Problems in Regression Analysis Multiple/General regression model, Non-linear regression models – parabolic, exponential, log-linear, semi-log, hyperbolic, and logistic regression models. Meaning and nature, tests, consequences and remedial measures of problems of Heteroscedasticity.	12
Unit-III	Regressions with Qualitative and Lagged Variables Multicollinearity and Auto-correlation; Problems of Specification Error and Errors of Measurement. Estimation of regression models by using Computer, Econometrics software: Gretl	12
Unit-IV	Regressions with Qualitative and Lagged Variables Dummy variable technique - Testing structural stability of regression models, Comparing two or more regression models, Interaction effects, Seasonal analysis, Other use of dummy variables; Regression with dummy dependent variables - LPM, Logit, Probit models and their applications.	12
Total		48
References: Goldberger, A.S. (1998), Introductory Econometrics, Harvard University Press, Cambridge, Mass. Gujarati, D.N. (2005), Basic Econometric (3 rd Edition), McGraw Hill, New Delhi. Kmenta, J. (1997), Elements of Econometrics (Reprint Edition), University of Michigan Press, New York. Koutsoyiannis, A. (1977), Theory of Econometrics (2 nd ed.) The Macmillan Press Ltd., London. Theil, H. (1981) Introduction to Econometric Prentice Hall of India, New Delhi. Johnson, J. (1991), Econometric Methods, McGraw Hill Book Co., London. Pindyck, R.S. and D.L. Rubinfeld (1976), Econometric Modles and Economic Forecasts, McGraw Hill Kogakusha, Tokyo. Harvey, A.C.(1981), Econometric Analysis of Time Series, Phillip Allen, London. Intrilligator, M.D. (1978), Econometric Methods, Techniques and Applications, Prentice Hall Englewood Cliffs, New Jersey.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON E 306:Financial Institutions and Markets – I		
Course Outcome: This course enables the students to undertake a rigorous study of the theoretical and empirical foundations of financial economics.		
Unit	Contents	Hours
Unit-I	<i>Nature and Role of Financial System</i> Money and finance –Financial inter-mediation and financial intermediaries – The structure of the financial system – Functions of the financial sector – Indicator of financial development – Equilibrium in Financial markets – Financial system and economic development.	12
Unit-II	<i>Structure of Interest Rates</i> Theories of interest rate determination – Level of interest rates – Long period and short period rates – Term structure of interest rates – Spread between lending and deposit rates – Administered interest rates – Appropriate interest rate policy.	12
Unit-III	<i>The Central Bank and Monetary Policy</i> Functions of central bank – The aims and objectives of the monetary policy in developed and developing countries – Instruments of monetary policy – proliferation of banking and non-bank financial intermediaries – Effectiveness of monetary policy – Credit creation and its control	12
Unit-IV	<i>The Commercial Banks and Development Banks</i> Profitability and efficiency of banks; Development banks – Role and functions; Investment banking and merchant banking; Financial sector reforms in India.	12
Total		48
References: Agnihotri, S.B. (2000), Sex Ratio in Indian Population : A Fresh Exploration, SAGE, New Delhi. Agrawala S.N. (1972), India’s Population Problem, Tata Mc Graw-Hill Co., Bombay. Bhole, L.M. (1999), Financial Institutions and Markets, Tata Mc Graw Hill Company Ltd., New Delhi. Bhole, L.M. (2020), Indian Financial System, Chugh Publications, Allahabad. Bose, A. (1996), India’s Basic Demographic Statistics, B.R. Publishing Corporation, New Delhi. Chamberlain, G. (1981). Training in Options, Woodhead-Faulker, Cambridge. Chandler L.V. and S.M. Goldfeld (1977). The Economics of Money and Banking, Harper & Row, New York. Chandra, P. (1997) Financial Markets. (4 th Edition). Table McGraw Hill, New Delhi. Choubey, P.K. (2000), Population Policy in India, Kanishka Publications, New Delhi. Edminsiter, R.O. (1988) Financial Institutions, Markets and Management Mc Graw Hill, New York. Goldsmith, R.W. (1969) Financial Structure and Development Yale, London. Gulati, S.C. (1988), Fertility in India : An Econometric Study of a Metropolis, SAGE, New Delhi. Gupta, L.C. (Ed.) (1999) India’s Financial Markets and Institutions, Society for Capital Research and Development, Delhi.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON E 307:Agricultural Economics – I		
Course Outcome: This course will help the students to understand the importance of agriculture in economic development and to discuss major agricultural issues and policies.		
Unit	Contents	Hours
Unit-I	<i>Agriculture and Economic Development</i> Nature and scope of agricultural and rural economics; Traditional agriculture and its modernization; Role of agriculture in economic development; Interdependence between agriculture and industry – some empirical evidence; Models of interaction between agriculture and the rest of the economy; Agricultural development, poverty and environment.	12
Unit-II	<i>Rural infrastructure, economic activities</i> Use of land, water and energy; Rural transport; communication, banking, extension services, role, modes and problems of rural electrification, rural social infrastructure – education and health and information dissemination. Livestock economics – Livestock resources and their productivity; Problems of marketing; White revolution; Fishery and poultry development; Forestry, horticulture and floriculture; issues and problems in rural industrialization and development of agro-based industries.	12
Unit-III	<i>Land Reforms and labour market</i> Rural labour supply; Interlocking of factor markets; Mobility of labour and segmentation in labour markets; marginalization of rural labour; Nature, extent and trends in rural unemployment; Agricultural wages in India; male-female wage differences; Non-agricultural rural employment – Trends and determinants. Principles of land utilization; Land distribution – Structure and trends; Land values and rent; Land tenures and farming systems – Peasant; capitalist collective and state farming; Tenancy and crop sharing – forms, incidence and effects; Land reform measures and performance; Women and land reforms; Problems of marginal and small farmers.	12
Unit-IV	<i>Agricultural Productivity</i> Agricultural production – Resource use and efficiency; Production function analyses in agriculture; Factor combination and resource substitution; cost and supply curves; size of farm and laws of returns – Theoretical and empirical findings; Farm budgeting and cost concepts; Supply response of individual crops and aggregate supply; Resource use efficiency in traditional agriculture; technical change, Labour absorption and gender issues in agricultural services.	12
Total		48
<p>Bilgrami, S.A.R. (1996), Agricultural Economics, Himalaya Publishing House, Delhi.</p> <p>Brahmananda, P.R., B.K.Narayan and A.Kalappa (Ed.)(1987), Dimensions of Rural Development in India, Himalaya Publishing House, New Delhi.</p> <p>Dantwala M.I. et al (1991), Indian Agricultural Development Since Independence, Oxford & IBH, New Delhi.</p> <p>Ghatak, S. and K. Ingerscent (1984), Agriculture and Economic Development, Select Books, New Delhi.</p> <p>Rao, C.H. Hanumantha (1975), Agricultural Growth, Rural Poverty and Environmental Degradation in India, Oxford University Press, New Delhi.</p> <p>Rudra, A. (1982), Indian Agricultural Economics : Myths and Reality, Allied Publishers, New Delhi.</p> <p>Soni, R. N. (1995), Leading Issues in Agricultural Economics, Vishal Publishing Co., Jalandhar.</p> <p>Wanmali S. and C. Ramasamy (Eds.) (1995), Developing Rural Infrastructure, Macmillan, New Delhi.</p>		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON CT 300: Contemporary Indian Economy		
Course Outcome: This course will enable the students to understand the status and importance of basic economic indicators of Indian Economy.		
Unit	Contents	Hours
Unit-I	Growth and Structure of Indian Economy. Growth of Indian economy since 1950. Measures for raising economic growth. Trends in the nature and magnitude of poverty, inequality and unemployment. Changes in occupational pattern, Demographic trends and economic development. Trends in savings, investment and GDP growth.	07
Unit-II	Growth of Agricultural and Industrial Sectors: Trends in agricultural production and productivity. Food policy and public distribution system (PDS). Impact of liberalization in agricultural sector. Industrial Growth performance and problems. Industrial concentration; its nature and extent. Cottage and small scale industries. Impact of liberalization and privatization on the industrial sector.	08
Unit-III	Money Supply, Inflation and Public Policies: Factors determining interest rates; Money supply and inflation in India. Financial sector reforms during 1990's; Recent tax reforms; Growth and structure of subsidies in India; Macro-economic policies – fiscal policy, income policy and stabilization policy; Parallel economy and its implications.	08
Unit-IV	International Trade Policies : Composition and directions of India's foreign trade; Factors determining the balance of payment; Disequilibrium in the balance of payment; Causes, consequences and policy measure; India's policies towards foreign capital; collaboration, export promotion and import substitution; Exchange rate policy and the convertibility of Rupee.	07
Total		30
Selected Readings: 1. S Mishra, S.K. and V.K. Puri Indian Economy - 1st Development Experience, Himalaya Publishing House, Mumbai, 2. Economic Surveys, Government of India, R.K. and Chatterjee (2001), Indian Economy : Agenda for 21st Century. 3. Dhar, P.K., Indian Economy- Its growing dimensions, Kalyani Publishers, New Delhi		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON VAC 308: Economic Issues and Policies of Odisha

Objective: This course aims to provide an understanding of different economic issues and policies in Odisha.

Unit	Contents	Hours
Unit-I	Overview of Odisha Economy: Structural change and occupational structure, Demographic features, Causes and effects of high growth rate of population, Measures to control population, Human Development, Trends of State Domestic Product, Fiscal Situation, FRBM Act. etc.	12
Unit-II	Agriculture in Odisha, Importance of Agriculture, Trends in Agriculture growth, Cropping pattern, green revolution, Agricultural finance, Land tenure and Land reforms etc. Agricultural Policies of Odisha	12
Unit-III	Industry and Service sector: Industrial Structure, performance of manufacturing sub sector, performance of large scale industries, new industrial Policies, performance of banking and Tourism sector etc. MSMEs of Odisha	12
Unit-IV	Social Sector developments in Odisha: Development of Health and Education in Odisha: Areas of concerns such as Trends of Unemployment, Poverty, Displacement and Migration.	12
Total		48

References:

1. Odisha Economy: Its Growing Dimensions, Bharti Publications; 2nd Edition 2022 [Paperback] Susanta Kumar Sethy
2. Odisha Economic Survey 2021-22 and other previous issues, Government of Odisha
3. Orissa State Development Report 2001, Planning Commission, New Delhi
4. Odisha - Economy - Encyclopedia Britannica, <https://www.britannica.com › place › Odisha › Economy>

ECON C 401:International Trade and Finance – II		
Objective: This course aims to provide an understanding of approaches for balance of payments adjustments trade policies, balance of payments, international institutions and economic integration. This help students to improve their analytical skills and they can relate with current trade situation.		
Unit	Contents	Hours
Unit-I	<i>Balance of payments</i> Meaning and components of balance of payments; Equilibrium and disequilibrium in the balance of payments; Devaluation and balance of payments adjustment; Foreign trade multiplier with and without foreign repercussions and determination of national income and output.	12
Unit-II	<i>Approaches for Balance of Payment Adjustments</i> Absorption, Payments and Monetary approaches for adjustment in the balance of payments; Expenditure-reducing and expenditure-switching policies for balance of payments adjustment; Approaches for achieving internal and external equilibrium simultaneously: The Swan model and Mundell-Fleming model; Relative merits and demerits of fixed and flexible exchange rates in the context of growth and development in developing countries. Theory of foreign exchange markets, Exchange trading, Arbitrage, and market hedging.	12
Unit-III	<i>International Economic Co-operation</i> Regionalism – EU, rationale and progress of SAARC/SAPTA and ASEAN region; problems and prospects of forming customs union in Asia; Multilateralism – UNCTAD, NIEO, GATT/WTO; Optimum Currency Areas; Rise and fall of gold standard and Bretton-Woods system and emerging international monetary system. International financial institutions – IMF and World Bank; Need, adequacy and determinants of international liquidity; Conditionality clause of IMF from the point of view of India. Theory of short-term capital movements and East Asian crisis, Asian Development Bank – Their achievements and failures.	12
Unit-IV	<i>Trade Policies and India</i> Trade problems and trade policies in India during the last five decades; Recent changes in the direction and composition of trade and their implications; Rationale and impact of trade reforms since 1991 on balance of payments, employment and growth; Instruments of export promotion; Recent import and export policies, and agenda for the future.	12
Total		48
References: Manmohan Singh (1964), India's Export Trends and the Prospects for Self-sustained Growth, Oxford University Press, New Delhi. Mundell, R. (1968), International Economics. The Macmillan Company Ltd. New York. Panchmukhi, V.R., K.M. Raipuria and R.Tandon (1987), Money and Finance in World Economic Order (RIS), Indus Publishing Co., Delhi. Panchmukhi, V.R. (1978), Trade Policies of India - A Quantitative Analysis, Concept Publishing Company, New Delhi. Joshi, V. and I.M.D. Little (1998), India's Economic Reforms, 1999-2000, Oxford University Press, New Delhi. Ptel, S.J. (1995), Indian Economy Towards the 21 st Century, University Press Ltd., India. Satyanarayan, B. (1986), India's Trade with Asia and the Far Fast Countries, B.R.Publishing Corp, New Delhi.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON C 402: Research Methodology

Course Outcome: The course will help students to introduce students to quantitative and qualitative methods for conducting meaningful inquiry and research. It is expected to gain an overview of research intent and design, methodology and technique, format and presentation, research ethics and data management and analysis.

Unit	Contents	Hours
Unit-I	<i>Introduction to Social Science Research</i> Introduction to social science research, different types of research, Methods of collection of data questionnaire and interview participant observation, theory of case studies, type of data primary & secondary, time-series and cross-section data. Database of the Indian economy.	12
Unit-II	<i>Review of Literature and Research Design</i> Need for reviewing literature, Sources of Literature, What to review and for what purpose, the Research proposal and the Formulation of research design, Need of a research design, Different research design, Features of a good research design	12
Unit-III	<i>Sampling in Social Science Research</i> Sampling in social science research, Different sampling methods- Random sampling, Probability sampling, simple and stratified random sampling, cluster sampling, systematic sampling, Sampling and non-sampling errors.	12
Unit-IV	<i>Research Report</i> Meaning and purpose of report, Target group in report writing, Contents of a report, Format of a Report, Qualities of a good research report, Types of a report. Planning of a report, Organisation of a report, Presentation of a report, Style in Report writing, Conclusion and Generalization.	12
Total		48
References: 1. Research Methodology- C. R Kothari 2. Research Methodology- Cauvery R. et al 3. Basic Statistics, Goon Gupta and Dasgupta 4. Scientific Social Survey and Research-P.V.Young		
Assessment: 100 (80 End Semester +20 Mid Semester)		

ECON E 403: Mathematical Economics – II

Course Outcome: The aim of the course is to provide the understanding of market equilibrium, game theory, Linear programming and input-output analysis. The course will generate knowledge for the students about the market equilibrium, game theory, Linear programming and input-output analysis.

Unit	Contents	Hours
Unit-I	<i>Market Equilibrium</i> Single Market Equilibrium - Marshallian Vs Walrasian equilibrium conditions; Lagged market equilibrium, Cobweb Model; Multi-market equilibrium – General equilibrium system of Walras, Stability conditions for equilibrium.	12
Unit-II	<i>Game Theory</i> The pay-off matrix of a game; two person, zero-sum game; non-constant sum game; pure and mixed strategies, maximin and minimax solutions, saddle point solution, Cooperative games, Nash Bargaining Solution; Prisoner's dilemma.	12
Unit-III	<i>Linear programming and Non Linear Programming</i> Linear programming– Primal and dual problem, Simplex method; Transport and storage problems and other applications of linear programming in economics, Concept of Non Linear Programming, Kuhn Tucker Conditions of optimisation.	12
Unit-IV	<i>Input-output Analysis</i> – Open and Closed systems. Transaction Matrix and coefficient Matrix, Hawkins Simon conditions. Dynamic Input-output system. Application in Economics.	12
Total		48

References:

Allen, R.G.D. (1976), *Mathematical Economics*, Macmillan, London.

Henderson, J.M. and R.E.Quandt (1990), *Microeconomics Theory: A Mathematical Approach* McGraw Hill, New Delhi.

Ferguson, C.E.(1976), *Neo-classical Theory of Production and Distribution*.

Allen, R.G.D. (1974), *Mathematical Analysis for Economists*, Macmillan Press and ELBS London.

Chiang, A.C. (1986), *Fundamental Methods of Mathematical Economics*, McGraw Hill, New York.

Jha, R.(1991), *Contemporary Macroeconomic Theory and Policy*, Wiley Eastern Ltd., New Delhi.

Hadley, G. (1962), *Linear Programming*, Addison Wesley Publishing Co., Massachusetts.

Kothari, C.R. (1992), *An Introduction to Operations Research*, Vikas Publishing House, New Delhi.

Dorfman, R.P.A.Solow R.W. : *Linear Programming and Economics Analysis*, McGraw Hill.

Gillett, B.E. *Introduction to Operations Research*, McGraw Hill, New York.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON E 404: Industrial Economics – II		
Course Outcome: The students will come to know the industrial policy and industrial development in India.		
Unit	Contents	Hours
Unit-I	<i>Optimum Plant Size and Diversification, Vertical Integration and Merger</i> The cost theory and optimum size of the plant: The theory of cost and production functions, Efficiency and the size of the firm; Empirical estimation. Motives for diversification: Theories and empirical evidence on mergers and acquisitions (M & As) and diversification; Measurement approaches and empirical evidence.	12
Unit-II	<i>Industrial Finance Accounting, Ratio Analysis and Investment decisions</i> Finance Accounting: Need of Finance; type of Finance and source of finance; Financial statements: Balance Sheet, Profit and Loss Account; Assessment of financial soundness. Financial ratio analysis: Classification and description of financial ratios; The standard of comparison of ratios; Break Even analysis; Application of Break Even analysis. Investment Decisions: Nature and type of Investment decisions.	12
Unit-III	<i>Indian Industrial Growth</i> Classification of industries; Industrial policy in India - Role of Public and private sectors; Recent trends in Indian industrial growth; MNCs and transfer of technology; Liberalization and privatization and the growth of industries.	12
Unit-IV	<i>Industrial Finance and Labour</i> Industrial Finance: Role, nature, volume and types of institutional finance – IDBI, IFCI, SFCs, SIDC, commercial banks etc. Industrial Labour: Structure of industrial labour; Employment dimensions of Indian industries; Industrial legislation; Industrial relations; Exit policy and social security; Wages and problem of bonus; labour market reforms.	12
Total		48
References: Barthwal, R.R. (1985), Industrial Economics, Wiley Eastern Ltd., New Delhi. Desai, B. (1999), Industrial Economy in India (3 rd Edition), Himalaya Publishing House, Mumbai. Government of India, Economic Survey (Annual) Kuchhal, S.C. (1980), Industrial Economy of India (5 th Edition), Chaitanya Publishing House, Allahabad. Singh, A. and A.N.Sadhu (1988), Industrial Economics, Himalaya Publishing House, Bombay. Bagchi, A. and M. Banerjee (Eds.) (1979), Change and Choice in Indian Industry, Bagchi Publications, Calcutta. Kelkar, V.L. and V.V. Bhanaji Rao (Eds.) (1996), India Development Policy Imperatives, Tata McGraw Hill, New Delhi. Sandesara, J.C. (1992). Industrial Policy and Planning – 1994 – 1991 : Tendencies, Interpretations and Issues, Sage Publications, India Pvt. Ltd., New Delhi. Sandesara, J.C. (1982), Industrial Growth in India.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON E 405: Econometrics – II		
Course Outcome: The students will understand the application of time series and their estimation in empirical research.		
Unit	Contents	Hours
Unit-I	<i>Simultaneous Equation Models-Meaning</i> Introduction to Simultaneous Equation models with examples; Simultaneous equation bias and inconsistency of OLS estimators; Structural and Reduced form; Identification problem–Order and Rank conditions for identification	12
Unit-II	<i>Estimation of Simultaneous Equations</i> Methods of estimating simultaneous equation system: Recursive methods and OLS, Indirect least squares (ILS), 2SLS and 3SLS.	12
Unit-III	<i>Autoregressive and Distributed Lag Models</i> Autoregressive and Distributed Lag Models – Koyck model; Adaptive Expectation model; Stock Adjustment model; Almon approach to distributed-lag models	12
Unit-IV	<i>Time Series Analysis</i> Time-Series Analysis – Basic concepts of time-series; Stationary and Non-stationary Stochastic Process; Integrated Stochastic Process; Random Walk model; Tests of Stationarity–Autocorrelation function and Correlogram; Unit Root test and Dickey-Fuller test, Co-integration and Engle-Granger (EG) test.	12
Total		48
References: Goldgerger, A.S. (1998), Introductory Econometrics, Harvard University Press, Cambridge, Mass. Gujarati, D.N. (2005), Basic Econometric (3 rd Edition), McGraw Hill, New Delhi. Kmenta, J. (1997), Elements of Econometrics (Reprint Edition), University of Michigan Press, New York. Koutsoyiannis, A. (1977), Theory of Econometrics (2 nd ed.) The Macmillan Press Ltd., London. Theil, H. (1981) Introduction to Econometric Prentice Hall of India, New Delhi. Johnson, J. (1991), Econometric Methods, McGraw Hill Book Co., London. Pindyck, R.S. and D.L. Rubinfeld (1976), Econometric Modles and Economic Forecasts, McGraw Hill Kogakusha, Tokyo. Harvey, A.C.(1981), Econometric Analysis of Time Series, Phillip Allen, London. Intrilligator, M.D. (1978), Econometric Methods, Techniques and Applications, Prentice Hall Englewood Cliffs, New Jersey.		
Assessment : 100 (80 End Semester +20 Mid Semester)		

ECON E 406: Financial Institutions and Markets – II

Course Outcome: The course will create the understanding of the students to know the Non-bank Financial Intermediaries, Financial markets, securities and derivatives markets and international financial markets.

Unit	Contents	Hours
Unit-I	<i>Non-bank Financial Intermediaries</i> Definition and types of non-bank financial institutions: Their growth and impact on India's economic development, measures taken to control their operations.	12
Unit-II	<i>Financial Markets</i> Role and structure of money market and capital market – call money market. Treasury bill market, commercial bill market including commercial paper and certificate of deposits, discount market.	12
Unit-III	<i>Securities and Derivatives Markets</i> Government securities market – markets for derivatives: features and options and other derivatives : types, uses and pricing of derivatives – Primary and secondary market for securities; SEBI: its impact on the working of capital market in India; IRDA and its role in financial markets.	12
Unit-IV	<i>International Financial Markets</i> Reforms in International monetary system for developing countries – Lending operation of world bank and its affiliates – Working of IDA and IFC; The Growth of Regional financial institutions; Asian Development Bank and its lending activities; Asian Development Bank and India, Euro-dollar and Euro-Currency markets; their developmental role and regulation at the International level.	12
Total		48

References:

- Hanson, J.A. and S. Rathuria (Eds.) (1999) India. A Financial Sector for the Twenty First Century, Oxford University Press, New Delhi.
- Harker, P.T. and S.A. Zenias (2000) (Ed.), Performance of Financial Institutions, Cambridge University Press, Cambridge.
- Johnson, H.J. (1993) Financial Institutions and Markets, Mc Graw Hill, New York. Khan, M.Y. (1996). Indian Financial System. Tata Mc Graw Hill, New Delhi. Machiraju, M.R. (1999), Indian Financial Systems. Vikas Publishing House, New Delhi.
- Mitra, A. (1979), Implications of Declining Sex Ratio in India's Population, Allied, New Delhi.
- Ohlson, J.A. (1987). The Theory of Financial Markets and Institutions, North Holland Amsterdam.
- Prasad, K.N. (2001). Development of India Financial System. Sarup & Sons, New Delhi. Robinson, R.I. and D. Wrightman (1981). Financial Markets, McGraw Hill, London. Sahadevan, K. G. and M.T. Thiripalraju (1997), Mutual Funds, PHI, New Delhi.
- Sayers, R.S. (1967), Modern Banking, Oxford University Press, New Delhi.
- Srinivasan, K. (1998), Basic Demographic Techniques and Applications, SAGE, New Delhi.
- Sudarshan and A. Shariff (1999), Gender Population and Development, Oxford University Press, New Delhi.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON E 407: Agricultural Economics – II

Course Outcome: This course enable the students to know the importance of rural finance and cooperation in India, agricultural prices, agricultural growth in India and its relation with external sector.

Unit	Contents	Hours
Unit-I	<i>Rural finance and cooperation in India</i> Role of capital and rural credit; Organized and unorganized capital market; Rural savings and capital formation; characteristics and sources of rural credit – Institutional and non-institutional; Reorganization of rural credit – co-operatives, commercial banks, regional rural banks, role of NABARD. Cooperative movement; Genesis and growth of cooperative sector; Agricultural cooperation in India; Problems and prospects of cooperative Institutions.	12
Unit-II	<i>Agricultural Prices</i> Marketing and state policy; Agricultural markets and marketing efficiency – Marketing functions and costs. Market structure and imperfections; Regulated markets; Marketed and marketable surplus; Behaviour of agricultural prices – Cobweb model; Price and income stability; State policy with respect to agricultural marketing; ware-housing; prices; taxation and crop insurance; Terms of trade between agricultural and non-agricultural prices; Need for state intervention; Objectives of agricultural price policy – Instruments and evaluation; Food security in India and Public distribution system..	12
Unit-III	<i>Agricultural growth in India</i> Recent trends in agricultural growth in India; Inter-regional variations in growth of output and productivity; Cropping pattern shifts; Supply of inputs – irrigation, power, seed and fertilizers; pricing of inputs and role of subsidies; Distribution of gains from technological change; Role of public investment and capital formation in Indian agriculture; Strategy of agricultural development and technological progress; sustainable agriculture – indigenous practices; bio-technological practices and growth potential.	12
Unit-IV	<i>Agriculture and external sector</i> International trade in agricultural commodities; commodity agreements; Issues in liberalization of domestic and international trade in agriculture; Role of MNCs.; Globalisation of Indian economy and problems and prospects of Indian agriculture; Impact of World Trade Organisation on Indian agriculture.	12
Total		48

References:

- Bilgrami, S.A.R. (1996), Agricultural Economics, Himalaya Publishing House, Delhi.
- Brahmananda, P.R., B.K.Narayan and A.Kalappa (Ed.)(1987), Dimensions of Rural Development in India, Himalaya Publishing House, New Delhi.
- Dantwala M.I. et al (1991), Indian Agricultural Development Since Independence, Oxford & IBH, New Delhi.
- Ghatak, S. and K. Ingerscent (1984), Agriculture and Economic Development, Select Books, New Delhi.
- Rao, C.H. Hanumantha (1975), Agricultural Growth, Rural Poverty and Environmental Degradation in India, Oxford University Press, New Delhi.
- Rudra, A. (1982), Indian Agricultural Economics : Myths and Reality, Allied Publishers, New Delhi.
- Soni, R. N. (1995), Leading Issues in Agricultural Economics, Vishal Publishing Co., Jalandhar.
- Wanmali S. and C. Ramasamy (Eds.) (1995), Developing Rural Infrastructure, Macmillan, New Delhi.

Assessment : 100 (80 End Semester +20 Mid Semester)

ECON D 408: Dissertation (Project Work)

Course Outcome:

The students will get a field exposure on relevant research issues with orientation to the entire investigative procedure involved in sample-surveys, ranging from sample drawl and execution of the questionnaire, tabulation and computation to the economic analysis of data, report preparation and presentation.

Guidelines for Preparing Dissertation

Manuscripts should consist of four major sections and should be placed in the order listed:

Preliminary Pages

Title Page

Certificate

Acknowledgment

Table of Contents

List of Tables

List of Figures

List of Abbreviations/Nomenclature/Symbols (optional)

Abstract

Text

Introduction (may be referred to as Chapter 1)

Body of Manuscript: It should consist of the followings.

Review of Literature

Data and Methodology

Results and Discussion

Conclusion

References (required)

Appendices (optional)

ECON VAC 409: Cultural Heritage of South Odisha

Non-Credit Course
Cultural Heritage of South Odisha
(ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ବିଭବ)
(To be taught in 4th Semester)

Aim of the Course (ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ)

Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as 'BHANJA BIHAR'. South Odisha is the adorable storehouse of literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha. (ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସାଂସ୍କୃତିକ ମହାନାୟକ କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ । ବ୍ରହ୍ମପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ ତାଙ୍କ ନାମରେ 'ଭଞ୍ଜବିହାର' ଭାବରେ ନାମିତ । ରଞ୍ଜନ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶା ସମଗ୍ର ରାଜ୍ୟର ବୁଧସଂସ କେଳିସର । ଏହାର କଳା-ସାହିତ୍ୟ-ସାଂସ୍କୃତି-ଲୋକପରମ୍ପରା ସର୍ବଭାରତୀୟ ସ୍ତ୍ରୀକୃତିପ୍ରାପ୍ତ । ଏହାରୁ ଦୃଷ୍ଟିରେ ରଖି ବ୍ରହ୍ମପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ସ୍ନାତକୋତ୍ତର ଶ୍ରେଣୀର ସମସ୍ତ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାହିତ୍ୟିକ ପ୍ରତିଭା ଏବଂ ଏହି ଅଞ୍ଚଳର କଳା, ସାଂସ୍କୃତି, ଲୋକ ପରମ୍ପରା ସମ୍ପର୍କରେ ସାଧାରଣ ଧାରଣା ପ୍ରଦାନ କରିବା ପାଇଁ ଏପରି ଅଧ୍ୟୟନ ବ୍ୟବସ୍ଥା କରାଯାଇଛି ।)

Details of the Course

This Paper consists of 50 marks with following 4 Units.

- Unit- I : Literary works of Kabi Samrat Upendra Bhanja
- Unit-II : Other Litterateurs of South Odisha
- Unit-III: Cultural Heritage of South Odisha
- Unit-IV: Folk and Tribal Traditions of South Odisha

ୟୁନିଟ୍-୧: କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କୃତି ଓ କୃତିତ୍ୱ

ୟୁନିଟ୍-୨: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାହିତ୍ୟିକ ସାଧକ

ୟୁନିଟ୍-୩: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ବିଭବ

ୟୁନିଟ୍-୪: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଆଦିବାସୀ ଓ ଲୋକ ପରମ୍ପରା

Course Outcome (ପାଠ୍ୟକ୍ରମର ନିଷ୍ପତ୍ତି)

The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale. (ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସାଂସ୍କୃତିର ଏହିପରି ଏକ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଦିଗରେ ପାଠଦାନ କରିବା ଦ୍ୱାରା କେବଳ ଯେ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜ ଓ ଦକ୍ଷିଣ ଓଡ଼ିଶାର କଳା-ସାହିତ୍ୟ-ସାଂସ୍କୃତି-ଆଦିବାସୀ ଲୋକ ଜୀବନ ଓ ଲୋକ ପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟ ଛାତ୍ରଛାତ୍ରୀ ସତେଜ ହୋଇପାରିବେ; ତାହା ନୁହେଁ, କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜଙ୍କ ସହିତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାହିତ୍ୟିକ ପରିମଣର ଏବଂ ଏହି ଅଞ୍ଚଳର ସାଂସ୍କୃତିକ ବିଭବ ଓ ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଛାତ୍ରଛାତ୍ରୀମାନେ ମଧ୍ୟ ସମ୍ୟକ ଜ୍ଞାନ ଆହରଣରେ ବ୍ରତୀ ହୋଇପାରିବେ ।)

Approved

Chairman, BOS(ECO)

CURRICULUM FRAMEWORK
M.A in EDUCATION
(C.B.C.S.)

BERHAMPUR UNIVERSITY
BHANJA VIHAR
2022-2023



Prepared by

P.G Department of Education



GOVERNMENT COLLEGE, KORAPUT

ସରକାରୀ ମହାବିଦ୍ୟାଳୟ, କୋରାପୁଟ

Odisha

COURSES OF STUDY
(M.A in EDUCATION)
Revised syllabus for the session 2022-23
Under
Choice Based Credit System



P.G DEPARTMENT OF EDUCATION
BERHAMPUR UNIVERSITY
BHANJA VIHAR
BERHAMPUR- 760007
ODISHA
(2022-2023)

MASTER OF ARTS IN EDUCATION:

The Master of Arts (M. A) in Education is a two-year program for students seeking a specialized exposure to the domain of education. This programme aims to specialize students to the multidisciplinary domain of education. It further develops capabilities in advanced teaching and learning, curriculum design, educational research, teacher education, policy development and analysis in education. The programme is intended to engage students in educational reform that requires good understanding and the ability to work in curricular and pedagogical areas of at least one subject. Research practice and experience has been embedded in each of the courses, ensuring that students gain a sound understanding of the nature of educational research. Besides, planning and policies of education, educational technology, special education and teacher education are included as a course of study to empower students to understand the National and International issues both from local and global perspectives.

Programme Outcomes (POs) M.A in EDUCATION Programme of Berhampur University as follows:

- Development of knowledge, comprehension and skill in educational theory and practice.
- Promote education as core and liberal discipline in higher education.
- Development of critical thinking and skill to find out solution to prevalent educational problems.
- Application of academic knowledge in practical life situation.
- Development of a conceptual understanding of educational technology, ICT and its uses in educational practices.
- Conducting research in various academic areas.
- Establishing close link between school and society.
- Providing intrinsic motivation in pursuing higher education.
- Inculcation of constitutional values among students.
- Development of a sense of equity and inclusion in higher education.
- Development of adjustment skills among students.
- Acquisition of professional ethics and social responsibility in improving the quality of education.

PROGRAMME STRUCTRE AT A GLANCE

M.A. in EDUCATION Programme comprising two years, will be divided into 4 (four) Semesters, each of six months duration, total 80 Credits and **2000** marks. Out of 100 marks, 20 marks will be counted as Mid-term (Internal Evaluation) in each course Papers and 80 marks will be counted as End term.

Year	Semester	Credit	Marks
FIRST YEAR	I	20	500
	II	20	500
SECOND YEAR	III	20	500
	IV	20	500
TOTAL		80	2000

Detailed Course Structure and Distributions of Marks

FIRST YEAR – 1ST SEMESTER

Courses		Distribution of Marks		Total Marks	Credit	Pages
Course No.	Title	Mid Term	End Term			
EDN C 101	Philosophical Foundation of Education.	20	80	100	4	9-10
EDN C 102	Sociological Foundation of Education.	20	80	100	4	11-12
EDN C 103	Psychological Foundation of Education.	20	80	100	4	13-14
EDN C 104	Measurement and Evaluation in Education	20	80	100	4	16-17
EDN C 105 (P)	PRACTICUM: Presentation of Four Seminar Papers on each core papers of First semester.	-	100	100	4	18
Total				500	20	

FIRST YEAR – 2ND SEMESTER

Courses			Distribution of Marks		Total Marks	Credit	Pages
Course No.	Title	Mid Term	End Term				
EDN C 201	Philosophical Foundation of Education.	20	80	100	4	19-20	
EDN C 202	Psychological Foundation of Education.	20	80	100	4	21-22	
EDN C 203	Measurement and Evaluation in Education	20	80	100	4	23-24	
EDN C 204	Pedagogy of School Subjects (Any One) English, Odia, Social Sciences, Math and Science.	20	80	100	4	25-37	
EDN C 205 (P)	PRACTICUM: A. Development of Instructional objectives B. Lesson Plan I. Five Practice Lessons II. Two Criticism Lessons III. One Final Lesson.	--	50 50	100	4	38	
EDN C 206	VAC Early Childhood Care and Education	20	80	NC	NC	39-40	
Total:				500	20		

SECOND YEAR – 3RD SEMESTER

Courses		Distribution of Marks		Total Marks	Credit	Pages
Course No.	Title of Course	Mid Term	End Term			
EDN CT 300 (CBCT)	Perspectives in Education	20	80	100	4	40-41
EDN C 301	Development of Education in India	20	80	100	4	42-43
EDN C 302	Research Methodology in Education	20	80	100	4	44-46
EDN C 303	Special Paper- (Any One of the following) A . Open and Distance Education. B. Inclusive Education C. Teacher Education.	20	80	100	4	47-52
EDN C 304 (P)	PRACTICUM: A. Development of Research Proposal. B. Development Of Tool and Presentation	-	50	100	4	53
EDN C 305	VAC Learning Techniques	20	80	100	NC	54-55

SECOND YEAR – 4TH SEMESTER

Courses		Distribution of Marks		Total Marks		Credit	Pages
Course No.	Title	Mid Term	End Term				
EDN C 401	Advanced Statistics in Educational Research	20	80	100		4	56-58
EDN C 402	Educational Administration and Management	20	80	100		4	59-61
EDN C 403	Advanced Educational Technology.	20	80	100		4	62-64
EDN C404	Special Paper-- (Any One of the following) A. Guidance and Counseling in Education B. Curriculum Development C. Higher Education.	20	80	100		4	65-70
EDN C 405 (P)	PRACTICUM: (Dissertation) Report preparation and Presentation	-	100	100		4	71
EDN C 406	VAC-Cultural Heritage of Southern Odisha	20	80	100		NC	72

20 Papers	Grand Total			2000	80	
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COMPONENT	NO. OF PAPERS	MARKS
THEORY	16	1600
PRACTICAL	4	400
GRAND TOTAL	20	2000

**MA EDUCATION
DETAIL SYLLABUS
FIRST SEMESTER**

EDN C -101

Philosophical Foundations of Education

COURSES OBJECTIVES:

(20+80 Marks)

On completion of this course, the students shall able to

- Understand the basic concept underlying both education and philosophy.
- Explain about different Western and Indian philosophical thoughts in the light of Metaphysics, Epistemology, Axiology and their educational implications.
- Compare (similarities and differences) between different philosophical thoughts in the light of above dimensions.
- Critically analyze the present educational practices in the philosophical context.
- Explain the contributions of Western and Indian thinkers in education.

Unit –I: Education and Philosophy –

- Concept, Meaning, Functions, and Modes of Education
- Aims of Education: Individual and Social.
- Meaning, Nature, Branches and Modes of Philosophy
- Importance of Philosophy in Education.
- Relationship between Philosophy and Education.

Unit- II: Indian Schools of Philosophy

- Samkhya, Vedanta, Jainism, Buddhism, Islamic philosophy, Christian Philosophy with special reference to the Metaphysics, Epistemology, Axiology and their educational implications towards aims, curriculum, methods of teaching, role of teacher and students and discipline.

Unit-III: Western schools of Philosophy

- Naturalism, Idealism, Realism, Pragmatism, Existentialism and Marxism with their relation to education.

Unit- IV: Indian Thinkers and their Educational Contributions.

- M.K.Gandhi, Swami Vivekananda, R.N.Tagore, Sri Aurobindo, J.Krishnamurthy, S.Radhakrishna, Utkalamani Gopabandhu Das

Mode of transaction

Lecture-cum-Discussion, Blended learning, Seminar, Workshop.

Suggested Readings:

- o Agrwal, J.C.(2010). *Teacher and education in a developing society*. Delhi: VikashPublishing House.
- o Ayer, A.J.(1959). *Logical positivism*. New York: The Free Press. Ayer,A.J.(1936). *Language, truth and logic*. U.S.A.: Penguin Books.
- o Arulsarmy, S. (2011). *Philosophical and sociological perspectives on education*.NewDelhi: Neelkamal Publication Pvt. Ltd.
- o Bhatia,K.K.(2011). *Philosophical and sociological foundation of education*. NewDelhi: Kalyani Publishers.
- o Brubacher,J.S. (1939). *Modern philosophies of education*.New York, USA:McGraw.
- o Butler,J.D.(1959). *Four philosophies and their practices in education andreligion*.New York: Harper.
- o Chaube, S.P. & Chaube, A. (2009). *Foundation of education*. New Dehli: VikashPublishing House Pvt.Ltd.
- o KnellerF.(1971). *Introduction to philosophy of education*. NewYork,USA:Macmillan.
- o Masih, Y. (2017). *A critical history of western philosophy*. New Delhi: MotilalBanarsidass.
- o Ross, J. S. (1960). *Ground work of educational theory*. London. U.K: George G.Harrap & Co.
- o Rusk, R. R. (1992). *Philosophical bases of education*. London, U.K: OxfordUniversity of London Press Ltd.
- o Sharma.C.D.(2016). *A critical survey of Indian philosophy*. New Delhi:MotilalBanarsidass
- o Wingo, G.M. (1974). *Philosophies of education*. New Delhi: Sterling Publishers.

SOCIOLOGICAL FOUNDATION OF EDUCATION

Course Objectives: (20+80 Marks)

On completion of this course, the students shall able to

- Understand sociological perspectives of education
- Familiarize with the sociological theories in the context of education
- Identify different issues related to inequality in Indian society
- Relate different social situations and practices of education.
- Explain concept of social stratification, social change and social mobility.
- Critically analyze the social phenomenon in the context of Indian society.
- Apply sociological principles in the matter of economic and cultural development.

Unit-I Introduction to Educational Sociology

- Concept of Sociology of education, Approaches of sociology of education: Symbolic interaction, Structural Functionalism and Conflict theory.
- Relationship between Sociology and Education
- Meaning, Nature and Scope of Educational Sociology.
- Concept and types of social institutions and their functions: Family, School and Society.
- Social Organization: Its concept, components, and dynamic characteristics.
- Factors affecting Social Organizations: Folkways, Mores, Institutions and Values.

Unit-II Education and Social, Economic and cultural Change

- Meaning, nature and types of social change
- Theories of social change-Evolution theory, Functional theory, Cyclical theory and Conflict theory and their educational implications.
- Role of education in Social and Cultural Change
- Education for Socially and Economically Disadvantaged groups with special reference to SC, ST, and Women.

Unit- III Process of social Change

- Social Mobility: Meaning and Types, Role of education in social mobility.
- Concept of social movements and theories: Relative Deprivation, Resource mobilization and Political Process theory, New social movement theory.
- Education in current Social Context: Urbanization, Modernization, Westernization, Globalization and Sanskritization.

Unit –IV Social stratification and issues in Indian society

- Concept of Social Stratification and its educational Implication.
- Illiteracy, Casteism, Gender discrimination, Unemployment, Drug addiction, Wastage and Stagnation
- Concept of Equality and Equity, Social values as enshrined in the constitution-Socialism, Secularism, Justice, Liberty, Freedom, Democracy and Equality.
- Role of education in strengthening National Integration and International Understanding.

Mode of transaction

Lecture-cum-discussion, Blended learning, Seminar, Workshop.

SUGGESTED READINGS:

- Abraham, M.F. (2008). *Contemporary sociology*. New Delhi: Oxford University Press.
- Agrwal, J.C. (2010). *Teacher and education in a developing society*. Delhi: Vikash Publishing House.
- Arulsarmy, S. (2011). *Philosophical and sociological perspectives on education*. New Delhi: Neelkamal Publication Pvt.Ltd.
- Bhatia, K.K. (2011). *Philosophical and sociological foundation of education*. New Delhi: Kalyani Publishers.
- Brown, F.J. (1954). *Educational sociology*. New York: Prentice Hall.
- Chaube, S.P. & Chaube, A. (2009). *Foundation of education*. New Delhi: Vikash Publishing House Pvt.Ltd.
- Clark, P. (2001). *Teaching and learning: The culture of pedagogy*. New Delhi: Sage Publication.
- Dewey, J. (1916). *Democracy and education*. New York: MacMillan.
- Dewey, J. (1973). *The school and society*. Chicago: University of Chicago Press.
- Mathur, S.S. (1966). *A sociological approach to Indian education*. Agra: Vinod Pustak Mandir.
- Pathak, R.P. (2012). *Philosophical and sociological principles of education*. Delhi: Person.
- Ottaway, A.K.C. (1966). *Education and society*. London: Routledge and Kegan Paul.
- Safaya, R.N. & Shaida, B. D. (2010). *Modern theory and principles of education*. New Delhi: Dhanpati Publishing Company Pvt. Ltd.
- Srinivas, M.N. (1986). *Social change in modern India*. Bombay: Allied Publishers.
- Rusk, Robert R. (1996). *Philosophical bases of education*. London, U.K: Oxford University of London Press Ltd.

EDN C 103

PSYCHOLOGICAL FOUNDATION OF EDUCATION

Course Objectives: (20+80 Marks)

On completion of this course, the students shall able to

- Explain different schools of psychology and their varied contributions to education.
- Understand the effective role of different psychological perspectives on student behavior, learning process and adjustment.
- Explain various theories of learning and their educational implications.
- Critically analyze different approaches of learning.
- Elaborate the concept of growth and development with their educational implications.
- Describe the concept, areas and causes of individual differences with their educational implications.

Unit-I Education and School of Psychology

- Meaning, Nature and Scope of Educational Psychology
- Importance of Psychology in Education
- Schools of psychology and their contributions towards education- Behaviorism, Psychoanalysis, Gestalt and Constructivism,
- Methods of Educational Psychology: Introspection, Observation, Case study and Experiment

Unit-II Growth and Development:

- Growth and Development their meaning and differences
- Principles of Growth and Development.
- Factors Influencing Growth and Development.
- Growth and development during Childhood and Adolescence: Physical, Mental, Social and Emotional
Special cares necessary towards this end.

Unit-III Individual Differences:

- Individual Differences: Concept, Areas, and Determinants
- Role of Heredity and Environment in developing Individual Difference.
- Educational implications of Individual Difference.

Unit-IV Learning:

- Concept and Principles of Learning
- Learning Theories: Trial and Error, Classical Conditioning, Operant Conditioning, Modelling theory (Bandura's Social theory), Humanistic theory (Carl Roger's theory of learning) Tolman's theory of learning, Kurt Lewin's Field theory, Bloom's Mastery learning, Ausubel's Meaningful learning and Gagne's Hierarchical learning.
- Factors Influencing of Learning.
- Transfer of Learning.

Mode of transaction

Lecture-cum-discussion, Blended learning, Seminar, Workshop, Small group discussion.

SUGGESTED READINGS:

- o Anastasi, A. (2016). *Psychological testing*. New Delhi: Pearson.
- o Bloom, B.S. (1976). *Human characteristics and school learning*. New York: McGrawHill.
- o Chauhan, S.S. (2007). *Advanced educational psychology*. New Delhi: Vikas Publishing House.
- o Dash, M. & Dash, N. (2016). *Fundamentals of educational psychology*. New Delhi: Atlentic.
- o Gagne, R.M. (1985). *The conditions of learning and theory of instruction*. USA: Harcourt Brace College.
- o Klausmeier, H.J. (1984). *Educational psychology*. New York: Harpercollins College Div.
- o Pass, S. (2004). *Parrel paths to constructivism: Jean Piaget and Lev Vygotsky*. North Carolina: Information Age Pub.
- o Piaget, J. (1969). *The psychology of child*. New York: Basic Books. Piaget, J. (1999). *The psychology of intelligence*. New York: Taylor and Francis.
- o Santrock, J.W. (2011). *Educational psychology*. Chennai: McGraw Hill.
- o Sternberg, R.J. and Sternberg K. (2011). *Cognitive psychology*. California: Wadsworth Publishing Co Inc.
- o Vygotsky, L.S. (1978). *Mind in society*. Cambridge: Harvard University Press. Vygotsky, L.S. (1986). *Thought and language*. Columbia: MIT Press.

EDN C-104

EDUCATIONAL MEASUREMENT AND EVALUATION

Course Objectives:

(20+80 Marks)

On completion of this course, the students shall able to

- Describe separate meaning of various concepts like Test, Measurement, Assessment and Evaluation.
- Get clear understanding of various tests and scales uses in students' evaluation.
- Calculate the Psychometric properties of the test.
- Explain the essential quality of good test and develop them carefully.
- Know the process of standardization and develop a standardize tools.

Unit-I Measurement and Evaluation

- Meaning, nature and importance of Test, Measurement, Assessment and Evaluation
- Types and basic principles of Educational Evaluation
- Scales of Measurement
- Principles of Evaluation
- Approaches of assessment (Assessment of learning, Assessment for learning and Assessment as learning)

Unit-II Types of Test

- Types of test (Achievement test, Aptitude test, Intelligence test and Interest inventories)
- Concept and types of Attitude Scale (Likert Scale, Thurstone scale, Semantic differential.

Unit-III Test Construction

- Process of test construction – Planning, Preparation, Tryout and Evaluation.
- Difference between Teacher-Made and Standardized test
- Types of test items – objective types (Recognition and Supply), Subjective types (Extended and Restricted), Reflective types, Interpretive types
- Item Analysis: Item discrimination, Item difficulty, Plausibility of distractor.

Unit-IV Characteristics of good Test

- Validity-Concept, Nature, Types and Approaches of validity
- Factors affecting validity
- Reliability – Concept, types, method of computation and factors affecting Reliability.
- Concept of Objectivity and usability
- Interpretation of test scores. Standard Scores-Z-Score, T-Score, Stanine ,Percentile, Percentile Rank and Grading (Absolute grading and Relative grading)

Modes of transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended leaning, Seminar, Workshop.

SUGGESTED READING:

- Anastasi, A. (1976). *Psychological testing*. New York: Macmillan Publishing Co.
- Anderson, L.W. (2003). *Classroom assessment: Enhancing the quality of teacher decisionmaking*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Burke, K. (2005). *How to assess authentic learning*. Thousand Oaks, CA: Corwin.
- Cooper, D. (2007). *Talk about assessment: Strategies and tools to improve learning*. Toronto, Ontario: Thomson Nelson.
- Ebel, R.L. & Frisbie, D.A. (1991). *Essential of educational measurement*. New Delhi: PrenticeHall of India Ltd.
- Freeman, F.S. (1962). *Theory and practice of psychological testing*. Oxford IBH Publishing: New Delhi.
- Garrett, H.E.(1973). *Statistics in psychology and education*. Bombay: Vakils, Feffers & Simon.
- Gronlund, N.E.& Linn, R. L. (2009). *Measurement and assessment in teaching*. Upper Saddle River, NJ: Pearson Education, Inc.
- Newman, F.M. (1996). *Authentic achievement: Restructuring schools for intellectual quality*. San Francisco, CA: Jossey-Bass.
- Nitko, A.J. (2001). *Educational assessment of students*. Upper Saddle River, NJ: PrenticeHall.
- Popham, W.J. (1993). *Modern educational measurement*.

Englewood Cliffs, N.J.:Prentice Hall.

- o Popham, W.J. (2010). *Classroom assessment: What teachers need to know* .New York:Prentice Hall.
- o Stanley,J.C. and Hopkins,K.D.(1990).*Educational and psychological measurement and evaluation*. New Jersey: Prentice Hall of India Ltd.
- o

EDN C - 105

PRACTICUM

(100 Marks)

Each student shall have to choose at least four seminar papers concerning the four Core papers mentioned in the syllabus of this **P.G. EDN Semester - I** with consultation of the teaching faculties of the department. After complete preparation of the selected seminar papers and the PPT, the papers are to be presented in the presence of both the teaching faculties and the students in the seminar session. The seminar papers must be content oriented and neatly typed each having (5 to 10 pages). The skill of presentation, discussion and questioning of the student will be carefully observed by the students and the faculty members as well. Finally, evaluation of one seminar paper presentation will be judged by both External and Internal examiner.

Distribution of marks for evaluation of final seminar presentation shall be as follows.

Clarification of Points and Discussion	= (25 MARKS)
Clarity in Preparation and Completeness of the Paper and PPT	= (25 MARKS)
Presentation of Paper	= (50 MARKS)

Total	= 100 MARKS

SECOND SEMESTER

EDN C -201

Philosophical Foundation of Education

COURSE OBJECTIVES :

(20+80 Marks)

On completion of this course, the students shall able to

- Explain about different Western and Indian philosophical thoughts in the light of Metaphysics, Epistemology, Axiology and their educational implications.
- Compare (similarities and differences) between different philosophical thoughts in the light of above dimensions.
- Critically analyze the present educational practices in their philosophical context.
- Explain the contributions of Western and Indian thinkers in education.
- Explain philosophical outlook to relate and analyze the context and problems of education.
- Realize the Practical importance of Yoga and Four Purusarthas.

Unit- I Modern Schools of Philosophy:

- Progressivism, Perennialism, Essentialism with special reference to Metaphysics, Epistemology, Axiology and their educational implications towards aims of education, curriculum, method of teaching, role of teacher and students, and discipline.

Unit-II Contribution of Western Thinkers to Educational Theories and Practice

- J.J. Rousseau, John Dewey, Montessori, Ivan Illich, Paul Freire.

Unit- III Education and Human values:

- Objectives of Value Education
- Sources and Types of Values
- Education for Human Values
- Constitutional values of India

Unit-IV : Educational Heritage of India

- Yoga – Its meaning, Elements (Yama, niyama, asana, pranayama, pratyahara, dhyana ,dharana, and samadhi).
- Importance of Yoga in human life
- Fundamentals of Four Purusharthas : Dharma, Artha, Kama, Moksha
- Education in fostering the sense of World Citizenship.

Mode of transaction :

Lecture-cum-Discussion, Blended learning, Seminar, Workshop.

SUGGESTED READINGS:

- o Agrwal, J.C. (2010). *Teacher and education in a developing society*. Delhi: VikashPublishing House.
- o Ayer, A.J. (1959). *Logical positivism*. New York: The Free Press. Ayer,A.J. (1936). *Language, truth and logic*. U.S.A.: Penguin Books.
- o Arulsarmy, S. (2011). *Philosophical and sociological perspectives on education*.NewDelhi: Neelkamal Publication Pvt. Ltd.
- o Bhatia,K.K.(2011). *Philosophical and sociological foundation of education*. NewDelhi: Kalyani Publishers.
- o Brubacher,J.S. (1939).*Modern philosophies of education* .NewYork, USA:McGraw.
- o Butler,J.D.(1959). *Four philosophies and their practices in education and religion*. New York: Harper.
- o Chaube, S.P. & Chaube, A. (2009). *Foundation of education*. New Dehli: VikashPublishing House Pvt.Ltd.
- o Kneller F. (1971). *Introduction to philosophy of education*.NewYork,USA:Macmillan.
- o Masih, Y. (2017). *A critical history of western philosophy*. New Delhi: MotilalBanarsidass.
- o Ross, J. S. (1960). *Ground work of educational theory*. London. U.K: George G.Harrap & Co.
- o Rusk, R. R. (1992). *Philosophical bases of education*. London, U.K: OxfordUniversity of London Press Ltd.
- o Sharma.C.D.(2016). *A critical survey of Indian philosophy*. New Delhi:MotilalBanarsidass
- o Wingo, G.M. (1974). *Philosophies of education*. New Delhi: Sterling Publishers

Psychological Foundation of Education

Course Objectives: (20+80 Marks)

On completion of this course, the students shall able to

- Describe different theories and approaches of Psychology: learning, motivation, intelligence, creativity and personality.
- Compare among different psychological perspectives of student behavior, learning process and adjustment.
- Administer and interpret different psychological test to measure psychological traits.
- Identify and describe various levels of disability.

Unit-I Motivation Theory

- Nature, function and classification of motives
- Theories of motivation and their educational implication:
- Mc Clelland's need for achievement, Vroom's expectation theory.
- Maslow's Hierarchical theory of needs.
- Murray's Hierarchical theory of needs
- Psychoanalytical theory.
- Factors affecting Motivation.

Unit- II Personality and Adjustment Mechanism

- Personality- Concept and Types.
- Type and Trait theories of Personality.
- Measurement of personality.
- Mental health and hygiene.
- Process of Adjustment, Conflicts and Defence Mechanism.

Unit- III Intelligence and Creativity

- Concept and Nature of Intelligence
- Intelligence theories and their educational implications- Structure theories (Uni factor, two factor, Multi factor, Structure of intelligence, Triarchic theory of intelligence (Sternberg), Cattell's theory of intelligence, Multiple theory of intelligence (Gardner), Measurement and types of intelligence test.
- Concept and Nature of Creativity
- Theories of creativity, Stages of creative thinking,
- Fostering creative talents among students through education,
- Measurement and types of creativity test.

Unit-IV Psychology and Education of Children with Special Needs

- Meaning and Types of disability.
- Learning Disability
- High Intellectual Capability (Giftedness)
- Sensory Impairment-Visual and Auditory
- Orthopedically Handicapped
- Emotionally Disturbed

Mode of transaction:

Lecture-cum-discussion Blended learning, Seminar, Workshop,
Small group discussion.

SUGGESTED READINGS:

- o Anastasi,A.(2016).*Psychological testing*. New Delhi: Pearson.
- o Bloom, B.S. (1976). *Human characteristics and school learning*. New York: McGrawHill.
- o Chauhan, S.S. (2007). *Advanced educational psychology*. New Delhi: Vikas Publishing House.
- o Dash, M. & Dash, N. (2016). *Fundamentals of educational psychology*. New Delhi:Atlentic.
- o Gagne, R.M. (1985). *The conditions of learning and theory of instruction*.USA:Harcourt Brace College.
- o Klausmeier, H.J. (1984). *Educationalpsychology*. New York: Harpercollins College Div.
- o Pass, S. (2004). *Parrel paths to constructivism: Jean Piaget and Lev Vygotsky*. North Carolina: Information Age Pub.
- o Piaget, J. (1969). *The psychology of child*. New York: Basic Books.
- o Piaget, J. (1999). *The psychology of intelligence*. New York: Taylor and Francis.
- o Santrock,J.W.(2011).*Educational psychology*. Chennai: McGraw Hill.
- o Sternberg, R. J. and Sternberg,K.(2011).*Cognitive psychology*. California:Wadsworth Publishing Co Inc.
- o Vygotsky, L.S. (1978). *Mind in society*. Cambridge: Harvard University Press.Vygotsky, L.S. (1986). *Thought and language*. Columbia: MIT Press

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Measurement and Evaluation in Education

Course Objectives:

(20+80 Marks)

On completion of this course, the students shall able to

- Understand the practical importance of various Models of Evaluation.
- Prepare a list of instructional objectives in the light of taxonomy developed in different behavioral domains.
- Aware about the uses of different tools and techniques of educational measurement.
- Know about various new trends in the field of educational measurement and evaluation.

Unit-I Models of Educational Evaluation and Assessment

- Goal attainment model
- Judgmental model
- Decision facilitation model
- Naturalistic model
- Continuous Comprehensive Evaluation.

Unit-II Instructional learning objectives

- Taxonomy of instructional learning objectives with special reference to cognitive domain
- Criteria of selecting appropriate learning objectives and stating of general and specific instructional learning objectives
- Relationship of evaluation procedure with learning objectives.

Unit-III Tools of Educational Measurement

- Checklist, Rating Scale, Observation, Schedule, Sociometric techniques, Portfolio, Rubric, Hot Potato.

Units-IV New Trends in Measurement and Evaluation

- Grading
- Semester System
- Continuous Internal Assessment
- Question Bank
- Use of Computer in Evaluation

Mode of transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended learning, Seminar, Workshop.

SUGGESTED READINGS:

- o Anastasi, A. (1976). *Psychological testing*. New York: Macmillan Publishing Co.
- o Anderson, L.W. (2003). *Classroom assessment: Enhancing the quality of teacher decisionmaking*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- o Burke, K. (2005). *How to assess authentic learning*. Thousand Oaks, CA: Corwin.
- o Cooper, D. (2007). *Talk about assessment: Strategies and tools to improve learning*. Toronto, Ontario: Thomson Nelson.
- o Ebele, R.L. & Frisbie, D.A. (1991). *Essential of educational measurement*. New Delhi: Prentice Hall of India Ltd.
- o Freeman, F.S. (1962). *Theory and practice of psychological testing*. Oxford IBH Publishing: New Delhi.
- o Garrett, H.E. (1973). *Statistics in psychology and education*. Bombay: Vakils, Fifers & Simon.
- o Gronlund, N.E.& Linn, R. L. (2009). *Measurement and assessment in teaching*. Upper Saddle River, NJ: Pearson Education, Inc.
- o Newman, F.M. (1996). *Authentic achievement: Restructuring schools for intellectual quality*. San Francisco, CA: Jossey-Bass.
- o Nitko, A.J. (2001). *Educational assessment of students*. Upper Saddle River, NJ: PrenticeHall.
- o Popham, W.J. (1993). *Modern educational measurement*. Englewood Cliffs, N.J.:Prentice Hall.
- o Popham, W.J. (2010). *Classroom assessment: What teachers need to know*. New York:Prentice Hall.
- o Stanley, J.C.and Hopkins, K.D. (1990). *Educational a psychological measurement and evaluation*. New Jersey: Prentice Hall of India Ltd.

EDN C-204

PEDAGOGY OF SCHOOL SUBJECTS

(Any one)

A. METHOD OF TEACHING ENGLISH

Course Objectives:

After completion of course the students shall be able to:

- Explain place of English language in India;
- Describe English as a second language in the multi lingual syllabus India;
- Explain different methods of teaching English;
- Apply different teaching skills in the classroom; and
- Develop lesson plans, micro lesson plans, TLM for teaching English as Second Language.

Unit-I: English as the second language in India

- The impact of the Renaissance and Reformation on the growth of the English Language.
- The rise and growth of Standard English.
- Position of English: Pre and Post-independence.
- Importance of English language; comparison of English and mother tongue-based learning.
- Status of English as a subject of study in the present curriculum.
- Aims and objectives of teaching English at different level.
- English language teaching: Problems and issues.

Unit-II: Methods, Approaches and Strategies

- Grammar-cum-translation method
- Direct method
- Bilingual method
- Structural approach

- Communicative approach
- Strategies: Lecturing, Language Games, Role play and Dramatization, Collaborative Learning, Ability Grouping, Group Work and Pair Work, Learning through Narratives and Discourses, 5E Instructional Design, ICON Instructional Design, Concept Mapping and Brain Storming.

UNIT-III: Developing Language Skills

- Listening Skill: Tasks of developing Listening Comprehension □
Speaking Skill: Tasks for developing Speaking skills.
- Reading skill: Types of Reading, Reading Strategies to develop reading Comprehension.
- Writing Skill: Strategies to improve writing skill, Qualities of good writing (simplicity, logicality and organization in writing), Creative writing.
- Strategies for teaching of prose, poetry, grammar and non-detailed text
- Supplementary Skill: Reference Skills (e.g. using Dictionaries, Thesaurus and Encyclopedias).
- Lesson delivers strategies: developing lesson plan, micro lesson plan and use of teaching aids.
 - Evaluation of language learning.

Mode of transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended leaning, Seminar, Workshop.

SUGGESTED READINGS:

- o Kohli, A.L (2010) *Techniques of Teaching English*. New Delhi: DhanpatRai publishing Company
- o Jain, R.K (1994) *Essentials of English Teaching*, Agra: VinodPustakMandir
- Sharma, K.L(1970) *Methods of Teaching English*

in India. Agra :Laxmi Narayan Agrawal

- o Shrivastava, B.D(1968) *Structural Approach to the Teaching of English.* Agra: Ramprasad and Sons
- o Baruah, T.C (1984) *The English Teacher's Handbook.* New Delhi: Sterling Publishers Pvt.Ltd,
- o Bista, A.R(1965) *Teaching of English. Sixth Edition.* Agra: VinodPustakMandir
- o Billows, F. L. (1975). *The Techniques of Language Teaching.* London: Longman
- o Mukalel, Joseph C. (2009). *Approaches to English Language Teaching.* New Delhi: Discovery Publishing House Pvt Ltd.
- o Bright, J.A(1976) *Teaching English as Second Language.* London: Long Man Group
- o Catarby, E. V (1986) *Teaching English as a Foreign Language in School Curriculum India,* New Delhi: NCERT
- o Dash, N. & Dash, M. *Teaching English As An Additional Language.* Atlantic Publishers &Distributors(P) Ltd., New Delhi, 2007
- o Pal, H.R and Pal, R(2006) *Curriculum – Yesterday, Today and Tomorrow,* New Delhi: Shipra Publications
- o Joyce, Bruce and Weil, Marsha (2003). *Models of Teaching.* New Delhi: Prentice Hall of India Pvt. Ltd.
- o Agnihotri R. K. and Khanna A. L. (1994). *Second Language Acquisition: Sociocultural and Linguistic Aspects of English in India.* New Delhi: Sage Publications.
- o Allen, H.B. (1965). *Teaching English as a second language: A book of readings.* New York: McGraw-Hill.
- o Hudelson, Sarah. (1995). *English as a Second Language Teacher Resource Handbook.*
- o A Practical Guide for K-12 ESL Programs. California.: Corwin Press, Inc.

B.METHOD OF TEACHING ODIA

Course Objectives:

After completion of the course the students shall be able to:

- Explain the concept of Mother Tongue;
- Justify the importance and objectives of teaching Mother Tongue (Odia) at Secondary Stage;
- Describe various pedagogical approaches of language teaching;
- Prepare subject specific lesson plan for improvement of language skills; and
- Plan and construct test to assess language skills and content areas.

UNIT-I: Importance, Place & Language Policy of Teaching (Odia)

- Concept of Mother Tongue and role of Mother Tongue in the life of an individual.
- Place of mother tongue in school curriculum.
- Aims and objectives of teaching Odia at School level.
- Odia as medium of instruction (as first language and second language).
- Multilingualism and importance of mother tongue.
- Home/first language as envisaged in NCF-2005.

UNIT II: Methods of teaching Odia

- Traditional and modern approaches of teaching Odia.
- Different approaches of teaching Odia; reading and comprehension method, recitation and narration method, play-way method, activity method, dramatization method & interactive and communicative approach; Creative writing in Odia.
- Preparation of lesson plan using 5E and ICON design model.
- Preparation of lesson plan on prose, poetry, grammar and non-detailed of Odia.

Unit III: Teaching aids and assessment for teaching Odia

- Importance of teaching aids and types of teaching aids for teaching Odia.
- Educational uses of different teaching aids.
 - Assessment of specific language skills. □ Tools of assessment in Odia language.

Mode of transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended leaning, Seminar, Workshop.

SUGGESTED READINGS:

- o Daswani, C. J. *Language Education in Multilingual India*. New/Delhi (UNESCO)
- o Kocchar, S.K. *Teaching of Mother Tongue*. Sterling Publishers, New Delhi.
- o Mathur, S.A. *Sociological Approach to Indian Education*. VinodPustakBhandar, Agra.
- o Nayak, B.; Mohanty, J.(1999): *Odiabhasa O SahityaraBhitibhumi O ShikshyadanPadhati*. Jagannath Process, Toni Road, Cutack-2.
- o Palmer, H.P. *Principles of Language Teaching*. George G. Harrep and Co. Ltd.
- o Rybum, W.M.(1926). *Suggestions for the Teaching of Mother Tongue*. OUP.
- o Saiyadain, K.G. *Education and Social Order*. Asia Publishing House, Bombay.
- o NCERT (2005). National Curriculum Framework, New Delhi.
- o <http://modersmal.skolverket.se/engelska/index.php/mother-tongue-education>
http://en.wikipedia.org/wiki/Language_education

C. METHOD OF TEACHING SOCIAL SCIENCES

Course Objectives:

On completion of the course the students shall be able to:

- Upgrade and update his knowledge of social studies by acquainting himself with various concepts;
- Develop the ability of critical and logical thinking;
- Acquainted with principles of formulating curriculum and preparation of text books in social studies;
- Acquainted with different methods, approaches, and techniques of teaching social studies;
- Formulate lesson planning for development of concepts and subject specific skills;
- Develop co-operation/collaboration/ability to work with others ,social, economic, cultural, and political environment; and
- Develop capacity for independent critical thinking including identifying/exploring fundamental relationships, making inference predicting consequences, suggestions, alternative methods of problem solving as when necessary.

Unit-I: Conceptual Framework of Social Science

- Meaning, nature and scope of social science as envisaged in NCF-2005.
- Aims, objectives and importance of teaching social sciences in school education.
- Place of social science in school curriculum.
- Identification of values/competencies/skills to be developed through social sciences.
- Correlation of social sciences with allied subjects.

Unit-II: Social Science Curriculum and Methods

- Principles of curriculum construction in social sciences.
- Organization of curriculum in social sciences.
- Methods of teaching social sciences: problems solving, project, source, narration-cum-discussion, lecture-cum-demonstration, observation, dramatization, field trip, laboratory method, environmental approach.

Unit-III: Instructional Aids, Lesson Plan and Evaluation

- Instructional Aids: Maps, Charts, Models, Timeline and other audiovisual aids.
- Lesson planning- 5E and ICON Design model.
- Pedagogical analysis of some contents in social sciences.
- Evaluation Techniques in Social Science.

Mode of transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended learning, Seminar, Workshop.

SUGGESTED READINGS:

- James H. (1953). *The Teaching of Social Studies in Secondary Schools*. London, UK: Longman Green & Co.
- Kochhar, S.K. (1970). *Methods of Teaching Social Studies*. New Delhi, India: Sterling Publication.
- Kochhar, S.K. *Teaching of History*. Delhi, India: Sterling Publishers Pvt. Ltd.
- NCERT. (1970). *Teaching of History of Secondary Schools*. New Delhi, India: Author.
- Taneja, V.R. (1970). *Fundamentals of Teaching Social Studies*. Mahendra Capital Publishers.
- Verma, O.P. (1984). New Delhi, India: Sterling Publishers Pvt. Ltd.
- Verma, O.P. & Vedanayagam E.G. *Geography Teaching*. New Delhi,

India: Sterling Publishers Pvt. Ltd.

- o Banks James, A. (1997). *Teaching Strategies for the Social Studies Enquiry, Valuing and Decision Making*. Massachusetts, USA: Addison- Westely Publishing Co. Reading.
- o Bining&Binning.(1952). *Teaching of Social Studies in Secondary Schools*. New York, USA: McGraw Hills.
- o Burston, W.H.(1963). *Principles of History Teaching*. New Fetter Lance : Methuen & Co. Ltd.II.
- o Choudhury, K.P. (1975). *The effective Teaching of History*. New Delhi, India: NCERT.
- o Dhamiaja Neelam.(1993). *Multimedia Approaches in Teaching Social Studies*. New Delhi, India: Harmer Publishing House.
- o James H. (1953). *The Teaching of Social Studies in Secondary Schools*. . London, UK: Longman Green & Co.
- o Kochhar, S.K. (1970). *Methods of Teaching Social Studies*. New Delhi, India: Sterling Publication.
- o Kochhar, S.K. *Teaching of History*. Delhi, India: Sterling Publishers Pvt. Ltd.
- o NCERT. (1970). *Teaching of History of Secondary Schools*. New Delhi, India: Author.
- o NCERT.(1966). *A Handbook for History Teachers*. Bombay: India: Allied Publishers.
- o Taneja, V.R.(1970). *Fundamentals of Teaching Social Studies*. Mahendra Capital Publishers.
- o Verma, O.P.(1984). New Delhi, India: Sterling Publishers Pvt. Ltd.
- o Verma, O.P.&Vedanayagam E.G. *Geography Teaching*. New Delhi, India: Sterling Publishers Pvt. Ltd .
- o Yagnik, K.S.(1966). *The Teaching of Social Studies in India*. Bombay, India: Orient Longman Ltd.
- o Yagnik, K.S.(1966). *The Teaching of Social Studies in India*. Bombay, India: Orient Longman Ltd.

D. METHOD OF TEACHING MATHEMATICS

Learning Objectives:

After completion of the course, the students shall be able to:

- Explain the nature and scope of mathematics;
- Identify different types of proof in mathematics and their application to solving mathematical problems;
- Appreciate the role of mathematics in day-today life;
- Relate the mathematical concepts with other school subjects;
- Achieve the mastery over the methods, strategy and approaches for transacting the contents of mathematics;
- Create the constructivist learning environment in the classroom;
- Develop learning-centred lesson plans and prepared content-enrich teaching learning materials;
- Integrate alternative assessment techniques in teaching mathematics;
- Develop mathematics achievement test and acquire of the scoring procedure; and
- Analyse learners learning difficulties and develop remedial strategies to meets needs of slow learners and to develop enrichment materials for the advanced learners.

Unit-1: Nature and Scope of Mathematics

- Aims and Objectives of teaching Mathematics at various levels.
- Instructional objectives in teaching mathematics.
- constructivist approach in teaching of Mathematics.
- Role of Mathematics; Mathematization; Aesthetic aspect of Mathematics.
- Importance of mathematics and its value in daily life- utilitarian, disciplinary, cultural, etc.
- Interrelationship of mathematics with other subjects at the secondary level.

- Changing trends of teaching Mathematics with reference to NCF-2005.
- **Unit-II: Methods and Approaches of Learning Mathematics**
- Methods of teaching Mathematics- Inductive and Deductive; Analytic and Synthetic; Problem Solving; Competence based approach.
- Approaches of learning Mathematics: co-operative approaches; constructivist approaches- pedagogical principles, interventions.
- Strategies of constructivist approaches- 5E'S learning model, ICON design model, Concept mapping and Self regulatory.
- Integration of different mathematical content through activities. **Unit-III: Planning for Teaching and Assessment in Mathematics**
- Planning for teaching Mathematics: Unit plan, Lesson plan, Development of Teaching Learning Materials(TLMs) and planning of content enrichment activities.
- Alternative assessment in Mathematics: observation, portfolio, concept mapping, assignment, rubric and project.
 - Development of diagnostic test and planning for remediation.

Mode of transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended leaning, Seminar, Workshop.

SUGGESTED READINGS:

- o Cooper, B. (1985). Renegotiating Secondary School Mathematics. The Hamer Press: East Sussex
- o James, A. (2003). Teaching of Mathematics. Neel Kamal Publication: Hyderabad
- o Michel. (1982). Teaching Mathematics. Nicholos Publication Co: New York
- o Sidhu, K.S (1985).Teaching of Mathematics. New Delhi: Sterling publication
- o NCF (2005). National Curriculum Framework. NCERT: New Delhi
- o NCERT (2005). Position paper of National Focus Group (NFG) on Examination Reform. NCERT: New Delhi
- o Scopes, P.G. (1973). Mathematics in Secondary Schools- A Teaching Approach. Cambridge: Cambridge University Press

E. METHOD OF TEACHING SCIENCE

Course Objectives:

After completion of the course, the student will be able to

- Gain insight on the meaning nature, scope and objective of science education;
- Appreciate science as a dynamic body of knowledge ;
- Appreciate the fact that every child possesses curiosity about his natural surroundings;
- Identify and relate everyday experiences with learning science;
- Appreciate various approaches of teaching learning of science;
- Employ various techniques for learning science;
- Use different activities like demonstration, laboratory experiences observation, exploration for learning of science;
- Facilitate development of scientific attitudes in learner; and
 - Construct appropriate assessment tools for evaluating science learning.

UNIT-I: Science as a Discipline

- Structure of Science: Facts, Concepts, Hypothesis, Theory, Law,
- Nature of science: Basic principles
- Method of scientific inquiry
- Correlation of Science with other subjects
- Relationship between science, technology and society
- Theoretical basis of school science education
- Aims , Objectives and values of teaching science at secondary level
- Development of scientific attitude

UNIT–II: Curriculum and Learning Resources in Science

- Science curriculum as envisaged in NCF-2005
- Place of science in the school curriculum at the secondary schools of Odisha
- Identification of learning resources from immediate environment and preparation and use of learning material,
- Exploring alternative resources
- Formal and non formal collection of materials.
- Use of ICT in teaching and learning of science
- Teaching Learning Materials and improvised Apparatus: Importance and Construction

UNIT- III: Instructional Planning &Evaluation for Teaching Learning of Science

- Models of teaching: Scientific Inquiry; Concept attainment
- Approaches in Science Teaching- Inductive-Deductive, Constructivist
- Methods of Science teaching- Lecture cum Demonstration method, Project method, Heuristic Method, Laboratory method.
- Practical applications of Computers for a science teaching.
- Unit Planning, Lesson Planning: Basic elements, Characteristics and Significance
- Evaluation: Types of tests (Oral, Written and Practical), construction of items.
- Diagnostic Testing and Remedial Teaching.

Mode of transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended leaning, Seminar, Workshop.

SUGGESTED READINGS:

- o Sood, J.K. (2003).VigyanShikshan (EikeesaviShatabdiKeLiye) Agra: VinodPustakMandir.
- o MHRD (1986). National Policy on Education .New Delhi:Gol
- o Mohan Radha(2010). Innovative Science Teaching Prentice Hall of India, New Delhi.
- o Tony L.,MattC.,BernieK.and Judith T.(2010).Teaching Science Sage Publication 29 India Pvt Ltd.
- o Clark Julia V. (1996). Redirecting Science Education. CORWIN Press Inc.California.
- o Sutton ,CR and Hayson JH . The Art of the Science Teacher , MC Graw Hill Book Company Ltd (1974)
- o NCERT (2005). National Curriculum Framework -2005
- o NCERT 2005). Position Paper of NFG on Teaching of Science- 2005
- o NCERT(2005). Position Paper of NFG Habitat and Learning- 2005

EDN C-205 (Marks 100)

PACTICUM

1. DEVELOPMENT OF INSTRUCTIONAL OBJECTIVES (50 MARKS)

Each student has to develop a separate list of Instructional objectives on the Core Courses of PG Education Semester-2 (Philosophical Foundation of Education, Psychological Foundation of Education and Measurement and Evaluation in Education) in different behavioural domains. The complete list of instructional objectives prepared on these three papers will be submitted and evaluated by the concerned Class Teacher. Finally, each student has to develop a separate list of Instructional objectives on the Pedagogy of School Subject (CC-204) and that will be examined by both External and Internal Examiner.

The Scheme of Evaluation will be as follows:

Preparation and Submission of the Record	= 25 Marks
Viva Voce.	= 25 Marks
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Total	=50 Marks

2. LESSON PLAN (50 MARKS)

For the evaluation of teaching competency and professional aptitude , each student has to prepare and deliver 5 Practice lesson Plans and 1 Criticism Lesson Plan in 5E Model from the selected Pedagogy of School subjects. And only a single lesson plan of each student in the same pedagogy subject will be examined in the presence of both the External and Internal Examiner during final evaluation.

The scheme of evaluation will be as follows:

Examination of Lesson Plan Record.	= 10 Marks
Lesson Delivery and Viva.	= 40 Marks
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Total	= 50 Marks

EDN-VAC C - 206
VALUE ADDED COURSE (V.A.C)

Value-added courses are those courses designed to enhance the standard of the students beyond those levels specified in academic curriculum. In order to enhance employability of the students value added courses are included in the curriculum. Add-on programs allow students to supplement degree programs with shorter, practical and industry-focused certificate and diploma program.

Program Duration

The duration of value added course is 30 hours with a combination 18 hours (60%) of theory and 12 hours (40%) of practical. However, the combination of theory and practical shall be decided by the course teacher with the approval of the Head of the Department.

Early Childhood Care and Education (ECCE)

Course Objectives: (20+80 Marks)

The students will be able to

- Describe the concept of Early Childhood Care and Education
- Identify the common types of diseases at early childhood
- Analyse the curriculum at Pre-School stage
- Evaluate the recommendations of various organizations on ECCE.

Unit-I Introduction to Early Childhood Care and Education

- Concept of Pre-School Education
- Aims and objectives of Pre-School Education
- Integrated Child Development Services Scheme (ICDS)
- Early Childhood Care and Education (ECCE) scheme
- Contributions of Froebel and Montessori to Pre-School Education

Unit-II Identification, Prevention and Remediation of Diseases in Early Childhood

- Early Childhood Health Care Programmes
- Common ailments and diseases in Early Childhood
- Identification, prevention, and remediation of common diseases in Early Childhood
- Concept and need of balanced diet.

Unit-III Curriculum at Pre-School Stage

- Types of Pre-School Centres
- Capacity building of personnel in ECCE
- Curriculum and activities at Pre-School Stage.
- Strategies for transaction of curriculum and role of teacher
- Status of Pre-School Education in India

Unit-IV Recommendations of various National and International Organizations on child development

- Recommendations of NPE-1986 in Pre-School Education
- Indian Education Commission on Pre-School Education
- Role of UNICEF, WHO, and CARE for Child development
- Role of Government and Non-Government organizations in organizing ECCE
- Problems and issues in ECCE

Modes of transaction:

Lecture cum Discussion method, Observational Design, New approaches of teaching, Project, Blended learning, Seminar, Workshop

SUGGESTED READINGS: -

- Aggarwal, J.C & Gupta, S (2007) Early Childhood Care and Education: Principles and Practices: New Delhi, Supra Publication.
- Brewer, J.A (1995) Introduction to Early Childhood Education.
- Boston, Allynand, Bacon, Gupta, M.S (2009) Early Childhood Care and Education: New Delhi, Prentice Hall if India Pvt Ltd.
- Jennifer, M.L (2009) Teaching Young Children: An Introduction: New Delhi, Pearson
- Mohanty, B & Mohanty, J (2007) Early Childhood Care and Education: New Delhi, Delhi Book House.

THIRD SEMESTER

CREDIT TRANSFER (CT)

EDN - CT 300

PERSPECTIVES IN EDUCATION

Course Objectives: (20+80 Marks)

Students will be able to:

- Know the philosophical outlook of Indian education
- Understand the role of education towards social and economic progress
- Apply the psychological principles in developing a child personality.
- Identify the area of difficulties and provide necessary guidance services.

Unit-I: Philosophical Perspectives in Education:

- Educational Heritage of India
- Educational thoughts of Great Educators: Swami Vivekananda, Mahatma Gandhi, Sri Aurobindo, Swami Dayanand Saraswati and Utkalamani Gopabandhu Das.
- Common characteristics of Indian Philosophy
- Education for National and International peace.

Unit-II: Socio-Economic Perspectives in Education

- Education and social change.
- Education and social order.
- Education and Economic change.
- Education and Human Resource Development.

Unit-III: Psychological Perspectives in Education

- Educational Psychology: Its Meaning, Nature and Scope.
- Individual Difference and role of Heredity and Environment.
- Education for Children with Special Needs.
- Development of Creative Personality through Education.

Unit-IV: Evaluation and Guidance Services in school

- Educational Measurement and Evaluation.
- Testing and Non-Testing devices, Continuous and comprehensive Evaluation.

- Educational and Vocational Guidance.
- Guidance Services in School Education.

Mode Of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop

SUGGESTED READINGS:

- o Das,B.N (2011) Foundations of Education: New Delhi, Kalyani Publishers
- o Dwivedi,R (2017) Basics in Education: New Delhi, Kalyani Publishers.
- o Nayak,B.K (1995) Education in Emerging Indian Society: Berhampur, TaratariniPustakalaya
- o Mohanty, J &Nayak,B.K (1995) Modern Trends and Issues in Education: Cuttack, Takshyashila Publication.
- o Walia,J.S (2000) Education in Emerging Indian society: Panjab,Poul Publishers.
- o Saxena,N.R.Swaroop (1995) Philosophical and Sociological Foundations of Education: Meerut,R.Lall Book Depot.
- o Panda,B.B (2004) Fundamentals of Educational Psychology: Cuttack, Bidyapuri.
- o Mangal,S.K (1993) (Advanced Educational Psychology: New Delhi, Prentice Hall of India Pvt.Ltd.
- o Chauhan,S.S (2007) Advanced Educational Psychology: New Delhi, Vikash Publishing House Pvt. Ltd.
- o Ratha,R.K (1994) Fundamentals of Educational Statistics and Measurement: Berhampur, TaratariniPustakalaya
- o Gronlund,N.E (1985) Measurement and Evaluation in Teaching, 6th Edition NewYork,MacMillan Publishing Company
- o Asthana,B&Agarwal,R.N (1982) Measurement and Evaluation in Psychology and Education: Agra, Vinod Pustak Mandir.
- o Kohhar.S.K (1996) Guidance and Counselling in Colleges and Universities: New Delhi, Sterling Publishers Pvt Ltd.
- o Aggarwal,J.C (1998) Educational Vocational Guidance and Counselling: Delhi,Doaba House Booksellers & Publishers.
- o Mehdi,B (1963) Guidance in Schools: NCERT (New Delhi)

EDN C-301
Development of Education in India

Course Objectives: (20+80 Marks)

After completion of the course the student will be able to
Know about the system of education during British Period

- Understand the educational reformations made during British period.
- Familiar with the recommendations of various Education Committees and Commissions.
- Update themselves with different National Educational Policies and revolutionary steps undergone during post-independence era.

Unit-I System of education during British Period-

- Charter Act and Macaulay's Minute
- Wood Dispatch
- Hunter Commission
- Calcutta University Commission
- Wardha Scheme of Education

Unit-II Committees and Commissions on Education in post-Independence India with reference to Background, Objectives and major Recommendations

- University Education Commission (1948)
- Secondary Education Commission (1953)
- Kothari Commission (1964-66)

Unit-III Policies on Education

- NPE-1968
- NPE- 1986
- Programme of Action, 1992
- National Curriculum Framework (2005)
- National Knowledge Commission (2007)
- Yashpal Committee Report (2009)
- National Curriculum Framework for Teacher Education (2009)
- Justice Verma Committee Report (2012)
- RMSA, 2009
- RTE Act, 2009
- RUSA, 2013

Unit-IV: National Education Policy, 2020

- NEP- 2020: Principles, Vision, School Education, Higher Education, Other key areas of focus, Challenges.
- Structure, Curriculum and Pedagogy of School Education
- Structure, Pattern and Vision of Higher Education
- Equity and Inclusion in Higher Education
- Vocational Education

Mode of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop.

SUGGESTED READINGS:

- o Aggrawal, J.C.(2010). *Landmarks in the history of modern Indian education*.New Delhi: Vikash Publishing Pvt Ltd.
- o Das, K.K. (1993). *Development of education in India*. New Delhi:KalyaniPublishers.
- o Dash, B.N. (1911). *Development of education in India*. New Delhi: Ajanta Prakashan.
- o Govt. of India (1986). *National policy on education*. New Delhi: MHRD. Govt.of India. (1992, 1998). *National policy on education, 1986 (Asmodified in 1992)*.
- o Retrieved from http://mhrd.gov.in/sites/upload_files/mhrd/files/NPE86-mod92.pdf
- o Keay, F.E. & Mitra, Sukumar (1978). *A history of education in India*. NewDelhi: Oxford University Press.
- o Ministry of Education (1966). *Education and national development*. NewDelhi: Ministry of Education, Government of India.
- o Mukherji, S.M., (1966). *History of education in India*. Vadodara: AcharyaBook Depot.
- o Naik, J.P. and Syed, N., (1974). *A student's history of education in India*. NewDelhi: MacMillan.
- o NCERT (2005). *National curriculum framework 2005*. New Delhi: NationalCouncilof Educational Research and Training.
- o Rawat, P.L.(1989). *History of Indian education*. New Delhi: Ram Prasad & Sons. Website, www.mhrd.gov.in

EDN C-302

RESEARCH METHODOLOGY IN EDUCATION

COURSE OBJECTIVES : (20+80 Marks)

On completion of this course, the students shall able to

- Describe about the evolutionary prospective of the process of knowledge construction.
- Describe the nature, scope and needs of Educational Research.
- Explain different approaches and designs of educational research.
- Identify and formulate research problem and state hypothesis.
- Differentiate between Probability and Non probability sampling techniques.
- Select and develop different types of data collection tools.
- Prepare research proposal and report.

UNIT-I Introduction to Educational Research

- Scientific method: Meaning, steps and characteristics of Scientific Method (Replicability, precision, Falsifiability and Parsimony).
- Types of Scientific Method (Exploratory, Explanatory and Descriptive).
- Aims of research as a Scientific activity: Problem solving, Theory building and Prediction.
- Meaning, nature, scope and needs of Educational Research.
- Types of Educational Research- Fundamental, Applied and Action research.
- Approaches to Educational Research Quantitative, Qualitative, and Mixed.

UNIT-II Research Process

- Research Problem- Criteria for selection, Sources of identifying problem and Statement of the Problem.
- Variables: Meaning, concepts and Types of Variables (Independent, Dependent, Active, Attribute, Intervening, Extraneous, & Moderator).
- Review of Related Literature- Meaning and Sources.
- Hypothesis and Research Question - Meaning, Characteristics, Types, Sources and Testing of hypothesis.
- Concept of Population and Sample.
- Methods of Sampling (Probability and Non-probability),
- Sampling Error and Estimating size of sample.
- Sources of data: Primary and Secondary
- Tools of Research: Tests, Scales and Inventories (types, construction and uses)
- Questionnaire Forms: Principles of construction and administration

UNIT-III Designs of Educational Research

- Historical research- Concept, Features and Process.
- Descriptive research- Concept, Needs, Types (Case study, Survey research, Phenomenological, Ethnographic, Naturalistic inquiry and Developmental) and process
- Co relational Research- Concept, Nature and Process
- Experimental Research- Concept, Features, Experimental Designs, Internal and External Validity and Process
- Causal Comparative Research: Definition and Purposes Design and Procedure
- Ex-post facto Research- Concept, Features and Process
- Mixed Methods Research: Integrating Qualitative and Quantitative Methods – Definition, Purpose, Design and Data Analysis Techniques

UNIT-IV Writing Research Report

- Developing Research Proposal: Steps, Ethical Consideration and Components, Formats and Style
- Writing Thesis/ Dissertation- General Guidelines, Format and Style APA Reference Style
- Writing Article for Journal
- Writing Paper for Seminar and Conference
- Writing Reference, Bibliography and Citation
- Research Ethics and Concept of Plagiarism & its Protection

Mode of Transaction:

Lecture cum Discussion method, Problem solving, Blended learning, Seminar, Workshop

SUGGESTED READINGS:

- o Ary, D. & Jacobs, L. (2002). *Introduction to research in education*. Belmont-USA:WadsworthThomason Learning.
- o Best, J.W.(1986). *Research in education*. New Delhi: Prentice Hall of India.

- o Borg, W.R. & Gall, M.D. (1989). *Educational research: An introduction*.NewYork:Longman.

- o Campbell, W.G. & Ballou,S.V.(1974).*Form and style: Theses, reports,termpapers*. Boston :Houghton Mifflin.
- o Creswell, J.W. (2014). *Educational research*. Delhi: PHI learning privatelimited.

- o Creswell, J.W. (2007). *Qualitative inquiry and research design: choosingamongfive approaches*. London: Sage Publications.
- o Edwards,A.L.(1984). *Experimental design in psychological research*. NewYork:HarperCollins College Div. Publication.
- o Gay, L.R. & Airsian, P. (2000). *Education research: competencies foranalysisand application*. New York: Macmillan.

- o Kerlinger, F.N.(2018). *Foundation of behavioural research*. Delhi:SurjeetPublication.

- o Koul, L.(1988). *Methodology of educational research*. New Delhi:VikashPublishing House.

- o McMillan, J.H. & Schumacher, S. (1989). *Research in education: Aconceptualintroduction*. New York: Harper Collins.

SPECIAL PAPER
EDN C – 303 (A)
OPEN AND DISTANCE EDUCATION

COURSE OBJECTIVES: (20+80 Marks)

After completion of this course, the students shall be able to:

- Explain the concept and Historical Development of Distance Education;
- Understand various issues related to distance Education
- Distinguish between Correspondence Education, distance education, and open learning;
- Familiar with different emerging concepts like Andragogy, self-learning and concept mapping.
- Discuss the socio-academic relevance of distance education.
- Develop an insight and examine critically the objectives of distance education;
- Describe the nature of distance learners and distance learning process;
- Describe SQ3R techniques and adopt the same technique for their study.
- Discuss various evaluation techniques and its relevance to distance learning.

Unit-I: Growth and Philosophy of Distance Education

- Open and Distance Education: significance, meaning, concept and epistemology.
- Goals and objectives of Distance Education.
- Philosophical foundations of distance education, historical perspectives, growth of distance learning system, International Council of Correspondence Education, International Council of Distance Education.

Unit -II Problems in Distance Education:

- Problems of Distance learners-isolation and lack of motivation etc.
- Issues in Distance Education-quantity, quality, relevance and effectiveness.
- Present status of distance education system, quality assurance and challenges in distance education in India.

Unit-III: Learner and Learning Process in Distance Education

- Distance learners: nature and characteristics, motivational factors and types of learners-successful, non-starter and mild course dropouts.
- Distance Education process: nature of adult learning, Andragogy of distance learning: role of self-learning in distance education, reading skills, stages of reading, taxonomy of reading-Barrett's taxonomy of reading comprehension; teaching reading comprehension skills; concept mapping.
- Reading: SQ3R Technique (Survey, Question, Reading, Recall, and Review).
- Significance of study skills in distance learning.

Unit-IV: Instructional Process in Distance Education & Open Learning

- Distance tuition-meaning and concept, Distance tutor-difference between a classroom and distance tutor.
- Tutor Comments-significance of tutor comments, levels of tutor communication (academic, personal and supplemental communication).
- Types of Tutor Comments-Positive Comments, Constructive Comments, Null Comments, Hollow Comments, Harmful Comments, Misleading Comments, Negative Comments, Global Comments and Personal Comments.
- Two-way communication in Distance Education and Open Learning.
- Supplementary communication in Distance Education and Open Learning-need, significance, type and importance.

Mode Of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop, Debate.

SUGGESTED READINGS:

- o Criscito Pat (2004): *Barron's Guide To Distance Learning*. Barron's E Publisher.
- o Daniel, J.S. et al; (1982): *Learning at a Distance: A world Perspective*. Athabasca University, Edmonton.
- o Education Commission Report (1948-1949) Ministry of Education, Government of India
- o Garg, S., Panda, S., Murthy, C. R. K. & Mishra, S. (Eds) (2006). *Open and Distance Education in Global Environment*. New Delhi: Viva Books.
- o Garg, S., Puranik, C., Venkaiah, V., & Panda, S. (Eds) (2006). *Four Decades of Distance Education in India: Reflections on policy and practice*. New Delhi: Viva Books.
- o ICDE (1995), 17 World Conference for Distance Education, One World, Many voices, Conference Papers, (ed) David Sewart (All references to Eastern Europe are form Vol. 1).
- o IGNOU (1988): *Growth and Philosophy Of Distance Education*. (Block 1, 2 &3). GNOU, New Delhi.
- o Rathore, H,C,S, (1993): *Management of Distance Education in India*. New Delhi: Ashish Publishing House.
- o Garrison, D.R. (1989): *Understanding Distance Education Framework for Future*. Routledge, Chapman and Hall, London.
- o Holmberg, B. (1986): *Growth and structure of Distance Education*. London: Croom Helm.
- o Holmberg, B. (1985): *Status and Structure of Distance Education (2 Ed.)*. Lector Publish.

SPECIAL PAPER
EDN C - 303 (B)
INCLUSIVE EDUCATION

Course Objectives: (20+80 Marks)

On completion of this course, the students shall be able to

- Describe historical background of inclusive education.
- Summarize concept, nature, and scope of inclusive education.
- Categorize types of inclusive education.
- Illustrate the types, characteristics of physically and sensory handicapped.
- Identify characteristics, etiology and prevention of physically and sensory handicapped.
- Categorize and summarize the types, characteristics, etiology and prevention of mentally handicapped.

Unit-I Introduction to Inclusive Education

- Concept of Impairment, Disability and Handicap and Inclusive Education
- Legal Provisions for their Education
- Persons with Disabilities Act 1995
- National Policy of Disabilities 2006
- National Curriculum Framework 2005
- RPWD Act 2016
- UNCRPD (United Nations Convention on the Rights of Persons with Disabilities)

Unit-II Support Needs of Students with Disabilities

- Types and degree of impairment, Characteristics, Etiology and prevention, educational programs of OH, HI, VI, MR, LD.
- Support needs of orthopedically handicapped, Hearing Impaired, Visually Impaired, Mentally Retarded and Learning-Disabled Students -Types of Handicapped, Characteristics, Educational programs.

Unit-III Planning and Management of Inclusive Classrooms

- Infrastructure: Removing Architectural Barriers
- Human Resource and Instructional Practices
- Curriculum and Curricular Adaptations for Diverse Learners
- Assistive and Adaptive Technology for Diverse learners
- Product (Aids and Appliances) and Process
- Individualized Education Plan
- Remedial Teaching)
- Parent Professional Partnership

Unit-IV Research Trends of Inclusive Education in India

- Barriers and Facilitators of Inclusive Education
- Attitude, Social and Educational
- Current Status and Ethical Issues of inclusive education in India
- Research Trends of Inclusive Education in India

Mode Of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop, Small group discussion.

SUGGESTED READINGS:

- o Bateman, D.F & Cline, J.L.(2016). *A teacher's guide to special education*. United State: ASCD.
- o Dash, M. & Dash, N.(2005). *Essentials exceptionality and special education*. New Delhi: Atlantic.
- o Hallahan, D.P., Kaceffan, J.M., & Pullen, P.C.(2011). *Exceptional learners: An introduction to special education*. New Delhi: Pearson Education.
- o Kirk, S., Gallagher, J.J. & Coleman, M.R.(2014). *Educating Exceptional children*. New Delhi: Cengage Learning.
- o Mangal, S.K.(2007). *Educating exceptional children: An introduction to special education*. New Delhi: Prentice Hall India Pvt.Ltd.
- o Panda, K.C.(1997). *Education of exceptional children*. New delhi: Bookman.
- o Sarangi, H. (2018). *Cognitive development of hearing impairs children*. New Delhi: Pacific book International.
- o Sharma, R.A.(2016). *Fundamental of special education*. New delhi: Bookman.
- o Werts, M.G., Culatta, R.A. & Tompkins, J.R. (2015). *Fundamental of special education: What every teacher needs to know*. New Delhi: Pearson.

SPECIAL PAPER
EDN C – 303 (C)
TEACHER EDUCATION

Course Objectives: (20+80 Marks)

On completion of this course, the student shall be to

- Describe the concept, scope and importance of Teacher Education.
- Analyze various policy recommendations for Teacher Education in India
- Critically evaluate professional ethics, autonomy and accountability of teachers in their profession.
- Identify the problems in implementation of the policies for Teacher Education.
- Analyze the role and functions of different agencies of teacher education in quality development of Teacher Education.

Unit-I Introduction to Teacher Education

- Teacher Education- Concept, Objectives, Scope and Importance.
- Types of Teacher Education- In-service Teacher Education and Pre-service Teacher Education.
- Organization of Components of Pre-service Teacher Education
- Transactional Approaches (for foundation courses) Expository, Collaborative and Experiential learning
- Agencies and Institutions of In-service Teacher Education at District, State and National Levels (SCERT, NCERT, NCTE and UGC)

Unit-II Development of Teacher Education in India

- Teacher education- Historical perspective.
- The Education Commission (1964-66)
- National Commission on Teacher-National Policy on Education (1986)
- NCF- 2005
- NCFTE-2009
- NCTE Regulation Act-2014

Unit-III Teaching as a Profession

- Teaching as a profession and its characteristics
- Professional growth of teacher- Meaning, purpose and strategies
- Teacher Effectiveness- Meaning, criteria for assessment and modification of teacher behavior.
- Characteristics of good teacher, professional ethics, autonomy and accountability of teacher
- Evaluation of teacher at different levels-
 - Evaluation by authority
 - Evaluation by students
 - Self-evaluation/Personal appraisal
 - Peer evaluation
- Importance of Teacher Evaluation
- Tools and Techniques for Teacher Evaluation

Unit-IV Models of Teacher Education

- Knowledge based Teacher Education from the view point of Schulman, Deng and Luke & Habermas
- Meaning of Reflective Teaching and Strategies for Promoting Reflective Teaching
- Models of Teacher Education - Behavioristic, Competency-based and Inquiry Oriented Teacher Education Models

Mode Of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop.

SUGGESTED READINGS:

- o Aggrawal, J.C.(1996). *The progress of education in free India*. New Delhi: AryaBook Depot.
- o Balram,R.(1993). *In service education and training of teachers*. Paris: OECD. Hopkins, D. & Reid, M. (1993). *Professional development of teacher*. London:Kogan Page.
- o Joshi, J.N. (1997). *Teacher education: pre-service and in-service*. New Delhi:NCERT.
- o NCTE (2009). *National Curriculum Framework for Teacher Education*.National Council forTeacher Education. https://ncte.gov.in/website/PDF/NCFTE_2009.pdf.
- o Nehru, S. & Suryanarayana, N.V.S. (2012). *Teacher education*.New Delhi: APHPublishing
- o Pany, S.(2013). *Teacher education in India*. New Delhi: Shipra Publication. Raggett,M. & Clarkson, M.(2012). *Changing pattern of teacher education*.NewDelhi: Routledge
- o Singh, U.K. & Sudarshan, K.N.(1996). *Teacher education*. New Delhi:DiscoveryPublication House Pvt. Ltd.
- o Srivastava, R.C.(1997). *Teacher education in India: Issues and perspective*. NewDelhi: Regency Publication.

EDN C -304
PRACTICUM

100 MARKS

1. DEVELOPMENT OF A RESEARCH TOOL: (50 MARKS)

Each student shall have to develop a research tool on his/her own choice from the categories of data collection tools mentioned in the Core Course 302 (Research Methodology in Education). The complete paper is to be submitted in the Department before one month of the commencement of Practical Examination positively. Finally the research tool developed by the candidate shall be examined by both the External and Internal Examiners jointly.

- Preparation and Submission of the Record = 25 Marks
- Viva Voce. = 25 Marks

Total = 50 Marks

2. DEVELOPMENT OF A RESEARCH PROPOSAL: (50 MARKS)

Each student shall have to choose a topic in consultation with his/her Supervisor and deliver a Seminar paper on the concerned topic in the Department. The Seminar topic shall be necessarily research oriented and on the basis of the paper presented the candidate has to develop a well furnished research proposal. Through the direct observation of the presentation of the paper on the research proposal candidate's performance shall be valued Jointly by both Internal and External Examiner. Distribution of marks for examination of student performance shall be as follows:

- Preparation and Submission of the Record =25 Marks
- Viva Voce. =25 Marks

Total = 50 Marks

EDN C-305

EDUCATION (V.A.C) VALUE ADDED COURSE

LEARNING TECHNIQUES

To develop proper understanding and teaching efficiency in the P.G students.

Course Objectives:

(20+80 Marks)

- Students will be able to know the meaning, definition and characteristics of Teaching.
- Students will be able to comprehend basic idea regarding the phases and levels of teaching.
- Students will able to know basic principles and skills of teaching.
- Students will be able to develop their level of confidence through practice of different skills of teaching.

Unit-I :-Concepts of Teaching

- Meaning, Definitions and characteristics of teaching
- Teaching as an art and science
- Fundamental principles of good teaching.
- Difference between Traditional and modern teaching technology

Unit-II : Phases, Theories and Level of Teaching

- Phases of Teaching: Pre-active, Interactive & Post-active
- Learning process-Variou facets of learning & Factors affecting learning
- Practical Implications of learning theories
- Teaching & learning at different levels: Memory level, Understanding level, Reflective level

Unit-III Teaching Skill

- Concept of Core Teaching Skills
- Types of Teaching Skill
- Characteristics of Teaching Skills
- Uses of Teaching skills.

Unit-IV Teaching Learning Process

- Important aspects of Teaching-Learning Process
- Components of Teaching learning Process
- A to Z of effective Teaching.
- Psychological principles of teaching

Mode Of Transaction

Lecture cum Discussion method, Blended learning, Seminar, Workshop

SUGGESTED READINGS:

- o Aggarwal, J.C (1997) Essentials of Educational Technology: Teaching Learning, New Delhi, Vikash Publishing House Pvt Ltd.
- o Mangal, S.K (1997) Foundations of Educational Technology: Ludhiana (Panjab), Tandon Publications.
- o Kulkarni, S.S (1986) Introduction to Educational Technology: New Delhi, Oxford & IBH Publishing Company.
- o Kumar, K.L (1996) Educational Technology: New Delhi, New Age International Publishers.
- o Chand Tara & Patel, R.N (1992) Educational Technology: Ansari Road (New Delhi), Anmol Publications.
- o Saxena, N.R. Swaroop & Oberoi, S.C (1995) Technology of Teaching: Meerut, R.Mall Book Depot.
- o Jangira, N.K & Singh, Ajit (1982) Core Teaching Skills: Micro Teaching Approach: NCERT (New Delhi), Publishing Division.

FOURTH SEMESTER

EDN C-401

Advanced Statistics in Education

COURSE OBJECTIVES: (20+80 Marks)

On completion of this course, the students shall able to

- Describe the concept, importance and use Descriptive and Inferential statistics in Research.
- Describe the concept, assumptions and use of Parametric and Non parametric statistics.
- Differentiate between the Parametric and Non parametric statistics in terms of their use in different contexts.
- Compute and use various statistical measures of Co-efficient of correlation, Variability, Regression and Prediction.
- Demonstrate the skill of computation of various type of Parametric and Non parametric statistics by use of SPSS.

Unit-I Introduction to Educational Statistics

- Meaning and purpose of educational statistics
- Data-Type, Sources of educational data and graphics representation of data.
- Computation and use of Range, Quartile Deviation, Average Deviation, Standard Deviation and Variance
- Descriptive and Inferential Statistics- concept, importance, differences and uses
- The Normal Probability Curve – Its meaning, nature and applications
- Standard Score-Z-Score and T Score
- Parametric and Non-parametric Statistics- concept, assumption, differences and uses
- Testing of hypothesis, Levels of significance, Types of error (Type-I and Type-II)
- One- Tailed test and Two- Tailed test

Unit-II Co-efficient of Correlation

- Correlation- Meaning and types of Correlation.
Computation of : Rank difference correlation and product moment correlation
- Biserial correlation
- Point Biserial correlation
- Tetrachoric correlation
- Phi-Coefficient correlation
- Partial correlation
- Multiple correlation

Unit-III Parametric Statistics

- Concept of Parameter and Statistics, Sampling Error and Standard Error
- Significance of difference between Means (t test)
- Testing of Hypothesis: Null and Alternative hypothesis
- Analysis of Variance (ANOVA)- Importance, uses, assumption and types (One-way, Two-way and Three-way),
- MANOVA (Multivariate Analysis of Variance) and ANCOVA
- Post-hoc test
- Regression and Prediction

Unit-IV Non-Parametric Statistics

- Concept of Non-parametric Statistics
- Chi-square test- Importance, Assumption, uses and types (Independence, and Contingency)
- Sign test, Run Test
- Median test and k-s test
- Mann-Whitney test
- Advantages and limitations of Non-parametric Statistics.

Mode Of Transaction:

Lecture cum Discussion method, Problem solving, Blended learning, Seminar, Workshop, Small group teaching, home assignment.

SUGGESTED READINGS:

- o Aggarwal, Y.P. (1988). *Statistical methods Concepts, application and computation*. New Delhi: Streling.
- o Edwards, A.L. (1959). *Experimental design in psychological research*. New York: Rinehart & Company, Inc.
- o Enhance, D.N., Elhance, V., & Aggaewal, B.M. (2014) *Fundamentals of statistics*. Allahabad: Kitab Mahal.
- o Ferguson, G.A. (1976). *Statistical analysis in psychology and education*. New York: McGraw Hill.
- o Fisher, A. (2017). *Statistical methods for research workers*. New Delhi: Kalpaz Publications.
- o Garrett, H. E. (1973). *Statistics in Psychology and Education*. Bombay: Vakils, Feffer and Simon.
- o Guilford, J.P. (1978). *Fundamental statistics in psychology and education*. New York: McGraw Hill.
- o Guilford, J.P. (1954). *Psychometric methods*. New York: McGraw Hill.
- o Mangal, S.K. (2008). *Statistics in education and psychology*. New Delhi: Prentice Hall.
- o Segal, S. and Castellan, N.J. (1988). *Non parametric statistics for behavioural science*. Singapore: McGraw Hill.

EDN C -402

EDUCATIONAL ADMINISTRATION AND MANAGEMENT

COURSE OBJECTIVES: (20+80 Marks)

On completion of the course, the students will be able to:

- Understand various components of institutional management;
- State the principles of resource management, performance appraisal time management in educational institutions;
- Explain the nature and functions of educational administration and supervision;
- Describe defects of present system of supervision;
- Reflect upon specific trends in educational supervision;
- Understand the role of central, state and local agencies in educational administration.
- Describe various techniques of supervision.
- Develop a thorough idea about leadership.

Unit-I: Educational Administration

- Educational Administration – Meaning, Principles, Functions and importance.
- Difference between General and Educational Administration
- Institutional building, POSDCORB, CPM, PERT, Management as a system, SWOT analysis, Taylorism, Administration as a process, Administration as a bureaucracy.
- Human relations approach to Administration, Organisational compliance, Organisational development, Organisational climate.

Unit-II Educational Management and Supervision:

- Educational Management: Its meaning, nature, scope
- Aspects of Educational Management
- Modern Trends in Educational Management
- Educational Planning
- Educational Supervision-Its meaning, aims, principles and changing concept
- Different techniques of Supervision and their effectiveness
- Educational Supervision and human relations

Unit-III: Leadership in Educational Management and Administration

- Leadership in Educational Administration: Meaning, Nature and importance
- Approaches to leadership-Trait, Transformational, Transactional, Value based, Cultural, Psychodynamic and Charismatic.
- Models of Leadership (Blake and Mouton's Managerial Grid, Fiedler's Contingency Model, Tri-dimensional Model, Hersey and Blanchard's Model, Leader-Member Exchange Theory)
- Measurement of leadership

Unit-IV: Quality Management in Education

- Concept of Quality and Quality in Education: Indian and International perspective.
- Evolution of Quality: Inspection, Quality Control, Quality Assurance, Total Quality Management (TQM), Six sigma.
- Change Management: Meaning, Need for Planned change, Three-Step Model of Change (Unfreezing, Moving, Refreezing).
- Cost of Quality: Appraisal Costs, Failure costs and Preventable costs, Cost Benefit Analysis, Cost Effective Analysis.
- Quality Assurance Agencies in India and Abroad: Objectives, Functions, Roles and Initiatives.
- National Assessment Accreditation Council (NAAC): Performance Indicators;
- Quality Council of India (QCI); and
- International Network for Quality Assurance Agencies in Higher Education (INQAAHE).

Mode Of Transaction:

Lecture cum Discussion method, Problem solving, Blended learning, Seminar, Workshop, Small group teaching, home assignment.

SUGGESTED READINGS:

- o Adolph and Turner Harold, E. Supervision for change & Innovation. Houghton Mifflin Company
- o AshimaV, Deshmukh & Naik. A.P (2010). Educational Management Girgaon, Mumbai: Himalaya Publishing House.
- o Bhatnagar, R.P & Verma, I.B (1978). Educational Administration. Meerut, India: Loyal Book Depot.
- o Bhatnagar, R.P & Verma, L.B (1978). Educational Administration. Meerut, India: Loyal Book Depot.
- o Dsah, N. School Management. Atlantic Publishers and Distributors (P) Ltd., New Delhi, 2008
- o Newman and summer. The process of Management: Concept, Behaviour and Practice. New Delhi, India: Prentice Hall of India Pvt. Ltd.
- o Robin Stepher P. Organizational Behaviour. New Delhi, India: Prentice Hall Pub. Pvt. Ltd.
- o Safaya, R. & Shaida, B. D (1964). School Administration and Organization, Jalandher, India: Dhanpat Rai & Sons.
- o Simon, Herbart A. Administrative Behaviour. New York, USA :McMillan
- o Harding. H. Management Appreciation. London, Pitman Publishing, 1987 Company.
- o Mukerji, S.N. Administration of Educational Planning and Finance. Baroda, India: Acharya Book Depot.

EDN C-403

ADVANCED EDUCATIONAL TECHNOLOGY

COURSE OBJECTIVES:

(20+80 Marks)

On completion of this course, the students shall able to

- Describe the concept and nature of Educational Technology, ICT in education and information Technology.
- Explain the models of Instructional Design.
- Explain the various application of Computer in education.
- Describe the concept and approaches of e-learning and social learning.
- Relate various Learning Theories with corresponding Instructional Strategies.
- Distinguish among different types of Instructional model.
- Apply the knowledge of Educational Technology, ICT and Instructional Technology to search information on different Open Education Resources.
- Acquaint themselves with different new trends in the field of educational technology.

Unit-I Introduction to Educational Technology

- Concept of Educational Technology (ET) as a discipline
- Information Technology, Communication Technology & Information and communication Technology (ICT) and Instructional Technology.
- Components of Educational Technology- Hardware, Software, Courseware and huamnware
- Applications of Educational Technology in Formal, Non formal (Open and Distance Learning), Informal and Inclusive education system.
- Meaning, nature and scope of ICT in education
- Communication: Its concept, meaning and process
- Mass media approach in Educational Technology

Unit-II System Approach to Instructional Design and Behavior Modification

- Concept of Teaching, Instruction and Learning
- Concept of System Approach to instructional design
- Models of development of Instructional design (ADDIE, ASSURE, Dickand Carey Model Mason's)
- Models of teaching: Basic Teaching Model of Robert Glaser, Concept Attainment Model of J. S. Bruner, Bloom's Mastery Learning, Robert Gange's Information Processing Model
- Micro Teaching and FIAS

Unit-III Instructional System and Strategies

- Application of Computers in Education: CAI, CAL, CBT, CLM
- Programme instruction (Linear and Branching)
- Gagne's Nine Events of instruction and Five E's of Constructivism
- Nine Elements of Constructivist instructional Design

Unit-IV Emerging Trends in E- learning

- Concept of E-learning, Approaches to e-learning (Offline, Online, Synchronous, Asynchronous, Blended learning, mobile learning).
- Social learning (Concept, use of web 2.0 tools for learning, social networking sites, blogs, chats, video conferencing, discussion forum)
- Open Education Resources (Creative Common, Massive Open Online Courses; Concept and application).
- Flipped Learning
- Blended Learning
- Recommendations of NEP 2020

Mode Of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop, Debate.

SUGGESTED READINGS:

- NCERT (2006). *National Curriculum Framework 2005 Position Paper National Focus Groupon Educational Technology*. New Delhi: Author.
- Senapaty, H.K. (2009). *ICT Integrated Learning Materials on Basic School Subjects from Constructivist Perspectives*. Bhubaneswar: Regional Institute of Education, NCERT (Monograph).
- Senapaty, H.K. (2011). *Pedagogy-Technology Integration for the Professional Development of Teacher Educators*. Bhubaneswar: Regional Institute of Education, NCERT (Monograph).
- Singh, L. C. (Ed.) (2010). *Educational Technology for Teachers and Educators*. New Delhi: Vasunandi Publication.
- UNESCO (2002). *Information and communication technology in education: A curriculum for schools and programme of teacher development*. Paris: UNESCO.
- UNESCO (2008). *Capacity Building for ICT Integration in Education*. Retrieved from <http://portal.unesco>.
- UNESCO (2008). *ICT Competency Standards for Teachers: Policy Framework*. Retrieved from <http://portal.unesco>.
- Mishra, P. and Koehler, M. (2007). Technological pedagogical content knowledge (TPCK): Confronting the wicked problems of teaching with technology. In C. Crawford et al. (Eds.). *Proceedings of Society for Information Technology and Teacher Education International Conference 2007*. Chesapeake, VA: Association for the Advancement of Computing in Education. (pp. 2214-2226).
- Mishra, P. and Koehler, M.J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teacher knowledge. *Teachers College Record*, 108 (6), 1017-1054.
- Mishra, S. (2008). Developing E-Learning Materials: Some Pedagogical Concerns. *Indian Journal of Open Learning*, 17 (2).
- Resta, P. (Ed.) (2002). *Information and Communication Technologies in Teacher Education: A Planning Guide*. Paris: UNESCO.
- Roblyer, M.D. (2008). *Integrating educational technology into teaching*. New Delhi: Pearson.
- Stodel, E.J. et al. (2006) Learners' Perspectives on What is Missing from Online Learning: Interpretations through the Community of Inquiry Framework. *The International Review of Research in Open and Distance Learning*, 7(3).
- <http://www.irrodl.org/index.php/irrodl/article/view/325/743>. Retrieved on 19 Feb., 2007.
- UNESCO (2002). *Information and Communication Technologies in Teacher Education A Planning Guide*. Paris: Author
- UNESCO (2005). *How ICT can create new, open learning environments: Information and communication technologies in schools: A handbook for teachers*. Paris: UNESCO.

SPECIAL PAPER EDN C-404(A)

GUIDANCE AND COUNSELING IN EDUCATION

COURSE OBJECTIVES: (20+80 Marks)

On completion of this course, the student-teacher shall be able to

- Summarize the concept, need, principles and bases of guidance.
- Apply various tools and techniques of guidance in appropriate contexts.
- Identify the role of school in organizing different guidance programmes.
- Illustrate the concept, scope and type of counseling.
- Extract the process, tools and techniques of counseling.
- Design different types of guidance services.

Unit-I Introduction to Guidance and Counseling

- Guidance and Counseling- Concept, Principles, Needs and Types (Educational, Vocational & Personal).
- Counseling- Concept, Types (Directive, Non-directive and Eclectic)
- Bases of Guidance-Psychological, Sociological and Educational.

Unit-II Tools and Techniques of Guidance

- Test and their significance in guidance programmes- various types of standardize test
- Non-Testing devices and their significance in guidance programmes with special reference to Questionnaire, Interview schedules, Socio- matric approach and Cumulative Record Cards

Unit-III Approaches and Theories of Counselling

- Cognitive- Behavioral (Albert Ellis – REBT)
- Humanistic
- Person- centered Counselling (Carl Rogers)
- Theories of Counselling (Behavioristic, Rational, Emotive and Reality)

Unit-IV Organization of Guidance Services

- Placement Service
- Occupational Information Service
- Counseling Service
- Follow-up Service
- Testing Service

Mode Of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop, Smallgroup discussion.

SUGGESTED READINGS:

- o Bhatnagar, A. & Gupta, N. (1999). *Guidance and counseling: A theoretical perspective(Vol.I)*. New Delhi: Vikas.
- o Bhatnagar, A. and Gupta, N. (1999). *Guidance and counseling: A practical approach(Vol.II)*. New Delhi: Vikas.
- o Dave, I. (1984). *The basic essentials of counseling*. New Delhi: Sterling Pvt. Ltd. Gazda,G. R.M.(1989). *Group counseling: A development approach*. London: Allynand Bacon.
- o Gibson, R.L. & Mitchell, M.H. (1986). *Introduction to guidance*. NewYork:McMillan.
- o Nugent, F. A. (1990). *An Introduction to the profession of counseling*. Columbus:Merrill publishing Co.
- o Pietrofesa, J.J., Bernstein, B., & Stanford,S.(1980). *Guidance: An introduction*.Chicago: Rand McNally.
- o Rao, S.N. (1981). *Counseling psychology*. New Delhi: Tata McGraw Hill. Saraswat, R.K. & Gaur, J.S.(1994). *Manual for guidance counselors*. New Delhi: NCERT.

SPECIAL PAPER
EDN C-404(B)
CURRICULUM DEVELOPMENT

COURSE OBJECTIVES: (20+80 Marks)

On completion of this course, the students shall be able to

- Illustrate the concept of Curriculum Development and various stages of Curriculum Development
- Compare among different types and models of curriculum development and their importance.
- Explain the process of curriculum development and curriculum implementations.
- Critically evaluate different Models of curriculum Evaluation
- Critically analyze the Models of curriculum development and their practical relevance in Indian context.
- Explain various factors affecting Curriculum.

Unit-I Introduction to Curriculum

- Concept and Principles of Curriculum, Component of curriculum Design
- Strategies of Curriculum Development, Stages in the Process of Curriculum development,
- Foundations of Curriculum Planning - Philosophical Bases (National, Democratic), Sociological basis (Socio cultural reconstruction), Psychological Bases (learner's needs and interests),
- Benchmarking and Role of National level Statutory Bodies - UGC, NCTE and University in Curriculum Development

Unit-II Models of Curriculum Design:

- Traditional and Contemporary Models (Academic / Discipline Based Model, Competency Based Model, Social Functions / Activities Model [Social Reconstruction],
- Individual Needs & Interests Model, Outcome Based Integrative Model, Intervention Model, CIPP Model (Context, Input, Process, Product Model)
- Content Analysis and System analysis.

Unit-III Curriculum Instructional Techniques and Evaluation

- Instructional System, Instructional Media,
- Instructional Techniques and Material in enhancing curriculum Transaction,
- Approaches to Evaluation of Curriculum: Approaches to Curriculum and Instruction (Academic and Competency Based Approaches),
- Models of Curriculum Evaluation: Tyler's Model, Scriven's Model, Kirkpatrick's Model
- Scientific models (Metfessl- Michael evaluation and Provu's Discrepantly)
- Humanistic models (Stakes responsive evaluation models, Paclett and Hamilton's model)

Unit-IV Curriculum change

- Meaning and Types of Curriculum change
- Factors Affecting curriculum change,
- Approaches to curriculum change, Role of students, Role teachers and educational administrators in curriculum change and improvement,
- Scope of curriculum research and Types of Research in Curriculum Studies

Modes Of Transaction:

Lecture cum Discussion method, Observational Design, New approaches of Teaching providing Self-learning instructional Materials, Blended leaning, Seminar, Workshop,

SUGGESTED READINGS:

- o Beane, J.A., Conrad, E.P. Jr. & Samuel, J.A. (1986). *Curriculum planning and development*. Boston: Allyn & Bacon.
- o Brady, L. (1995). *Curriculum development*. New Delhi: Prentice Hall. Doll, R.C. (1996). *Curriculum development: Decision-making and process*. Boston: Allyn & Bacon.
- o Krug, E.A. (1956). *Curriculum planning*. New York: Harper and Row Publishers. Ornstein,
- o A.C. & Hunkins, E (1998). *Curriculum. Foundations, Principles and Issues*. Boston: Allyn & Bacon, Boston.
- o Oliva, P.F. (2001). *Developing the curriculum* (Fifth Ed.). New York, NY: Longman.
- o Pratt, D. (1980). *Curriculum design and development*. New York: Macmillan Publishing Co. Inc.
- o Saylor, J.G., Alexander, W.M. & Lewis, A.J. (1981). *Curriculum planning for better teaching and learning*. New York: Holt Rinehart & Winston.
- o Taba, H. (1962). *Curriculum development-theory and practice*. New York: Harcourt Brace, Jovanoich.
- o Tanner, D. and Tanner, L. (1975). *Curriculum development- theory and practice*. New York: Macmillan Publishing Co. Inc.

SPECIAL PAPER
EDN C 404 (C)
HIGHER EDUCATION IN INDIA

Course Objectives: (20+80 Marks)

On completion of this course, the student shall be able to

- Analyze various policies and their recommendations on various aspects of higher education.
- Evaluate the functions and importance of different Higher education institutions.
- Examine the problems in implementation of the policies of higher education in India.
- Explore the problems and reforms in higher education in India.
- Analyze role of various agencies of higher education in India.

Unit-I Development of Higher Education in India

- Development of Higher Education in India during the Pre-Independence period-a brief history
- Development of Higher Education in India during the Post-Independence period with special reference to recommendation of UEC (1948), IEC (1964-66), and NPE (1986) NEP (2020)

Unit-II Higher Education Institutions

- Types of Universities (Central, State, Deemed and private): Establishment, management and functions.
- Institutes of National Importance: AIIMS, IIMs, IITs, IISERs, IITs and NITs
- Types of Universities in NEP 2020: Teaching-Intensive Universities, Research Intensive Universities and Autonomous Degree-Granting Colleges
- Open University, Institute of National importance: IIT, IIM, IISER and AIIMS.

Unit-III Management of Higher Education

- Ministry of Human Resources Development (MHRD)- Role and functions
- State Department of Higher Education- Role and functions
- University Grant Commission (UGC)- Role, management and functions
- All India Council for Technical Education (AICTE)-Role, management and functions.

Unit-IV Reforms in Higher Education

- Human Resources Development Centre- Role and functions
- Academic Credit Bank in NEP 2020
- Multiple Entry-Exit Options in Academic Programmes
- Holistic and Multidisciplinary Education
- Higher Education Commission of India (HECI)
- National Scholarship Portal
- National Educational Technology Forum (NETF)

Mode Of Transaction:

Lecture cum Discussion method, Blended learning, Seminar, Workshop, Smallgroup discussion.

SUGGESTED READINGS:

- o Rao, K.Sudha (Ed.) (2002). *Educational policies in India: Analysis and review of promise and performance*. New Delhi: NUEPA.
- o Ministry of Human Resource Development (2011). *Indian Institutes of development*. New Delhi: Government of India
- o Cheney, G. R., Ruzzi B. B. and Muralidharan, K. (2005). *India education report*. New Delhi: NCEE (National Center on Education and the Economy).

- o MHRD (2020). *National Education Policy 2020*. Ministry of Human Resource Development, Government of India. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf.
- o UGC (University Grants Commission) (2008). *Higher education in India: Issues related to expansion, inclusiveness, quality and finance*. New Delhi: University Grants Commission.
- o Veena, B. (1998). *Accountability and Autonomy in higher Education*. New Delhi: AIU.
- o UNESCO (1998). *Higher education in India: Vision & action*. New Delhi: UNESCO. Department of Secondary and Higher Education (2001). *Committee on autonomy of higher education institutions*. New Delhi: Government of India.

EDNC – 405
PRACTCUM
DISSERTATION

(100 Marks)

Each Student has to select a problem on any area of education, and undertake an extensive research work and prepare dissertation under the guidance of any faculty of the department. He/she is required to submit the complete dissertation to the Department 15 days before the practical examination. The evaluation of the research work will be jointly made by both External and Internal Examiner.

The mark shall be distributed as follows:

• Dissertation.	= 50 Marks
• Viva Voce.	= 50 Marks

Total	= 100 Marks

VAC C-406

CULTURAL HERITAGE OF SOUTHERN ODISHA

(Non-Credit Grade Point Add-On-Course)

INTRODUCTION:

(20+80 Marks)

Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as 'BHANJA BIHAR'. South Odisha is the adorable storehouse of literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South.

Details of the Course:

Unit I - Literary works of Kabi Samrat Upendra Bhanja

Unit II - Other Litterateurs of South Odisha

Unit III - Cultural Heritage of South Odisha

Unit IV- Folk and Tribal Traditions of South Odisha.

Course Objectives:

The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positivities learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale.

[Irrespective of Arts, Science, Commerce & Mgmt. all 4 sem. P.G. students shall attend this class. i.e.ODIA AC 410. The faculty member of P.G. Dept. Odia will teach this Paper. Details about teaching will be notified letter on .]

----- THANKS -----

Post Graduate Department of English
Berhampur University



**COURSES OF STUDIES
FOR
THE M.A. in ENGLISH EXAMINATION
(SEMESTER PATTERN)**

**Under the
CHOICE BASED CREDIT SYSTEM**

2022

Published by:
BERHAMPUR UNIVERSITY
BHANJA BIHAR
BERHAMPUR-760007(GANJAM) ORISSA

Introduction:

Department of English was established in the year 1976 in Berhampur University. Berhampur University is the only university in the state which offers comprehensive, interdisciplinary approaches in M.A and M.Phil./ Ph. D courses with Linguistics and ELT as Core components and American Literature, Ecocriticism, Eco-linguistics, Translation and Creative Writing as electives. The Course offers Professional and Academic Writing in the CBCT (Allied Elective) paper (designed for inter departmental Elective). The course offers a Value added/ Add-on course (non-credit) in each Semester which intends to bring about a wholesome development in the student.

The prime objective of this Department was to prepare quality researchers and teachers in the field of English Literature and Language, both through teaching and research, to meet the demand of the state as well as the country. The objective of the Department is also to enhance the skills of the students so that they can avail myriad job opportunities in the fields of study and in related fields as well.

Facilities:

P.G. Department of English has the following facilities for students and research scholars:

Seminar and Library:

Department has an independent Seminar library (Biyotkesh Tripathy Library) and a Seminar Hall with audio-visual system where weekly students seminar are conducted under the supervision of a Teacher-In-Charge. Department has its own library with about 4000 books and several recorded lectures, journals / newsletters.

Computing facilities:

The department has a computer laboratory equipped with internet facility. Expert teachers help the students use the facilities to learn LSRW Language skills.

The two-year Master of Arts (English) programme shall comprise FOUR Semesters. Semester I and Semester II shall be taught in the first year, while Semester III and Semester IV shall be taught in the second year of the M. A. Programme. Each semester shall consist of FIVE papers.

Objective:

- i. The course is meant for advanced readers in the field of English Literature in particular and World Literature in general with an interdisciplinary approach and a view to helping them acquire the following:
 - a) Greater flexibility in understanding the cultures of different parts of the world through their literature
 - b) Ability to develop a diachronic understanding of how the English language has been differently handled in different generations as well as different continents and cultures.
 - c) Greater ability to use the English language both professionally and personally at different phases of human experience.
 - d) Greater ability to understand and develop competence in English Linguistics and technicalities of ELT.
 - e) Ability to understand ecology, sustainability and empathize with the world around

Visualized outcome of the Programme

- a) With an enhanced worldview through literatures in English, the students can shape into great ambassadors of literary as well as cultural exchange on a global scale.
- b) The course will help promote humanistic ideals while emphasizing the need for sustainability, global peace and ecological well-being.
- c) The course will help the students find employment in different sectors with expertise in English language and enlarged worldview.

Details of Credit

1. Total no. of credits: 80

CC	Core Course	1500 marks (60 credits)	Mandatory with no choice
CE	Core Elective	400 marks (16 credits)	Mandatory with choice Departmentally
AE/CT	Allied Elective	100 marks (4 credits)	Mandatory Inter-Departmentally

2. Total no. of credits per semester: 20

3. Total no. of credits per Paper: 04

3. One credit: One hour of teaching per week.

4. One Unit in each paper for Self Study by the student

5. Each paper shall be evaluated out of 100 marks subject to the following division:

(a) Internal Assessment: 20% [From the Self Study Unit ONLY]

(b) End-Semester: 80% [From all the Units]

Pattern of Examination:

Each paper shall comprise **FOUR units** out of which **One unit** will be for *Self Study* (**Internal Assessment questions will be set from this unit**). For the **term end Examinations** the students shall **answer questions from Section “A” and Section “B”**.

	Section A : 20 marks	
Question 1.	04 questions	04× 4 = 16
OR Question 2	08 questions	08× 02 = 16
	Section B : Answer all Questions (04× 16 = 64 marks)	
	Unit I	
Q. 3	(a)	
	OR	
	(b)	
	Unit II	
Q. 4	(a)	
	OR	
	(b)	
	Unit III	
Q. 5	(a)	
	OR	
	(b)	
	Unit IV	
Q. 6	(a)	
	OR	
	(b)	

Note:

Special Paper programme will be in FOUR PAPERS to be taught Under the Third and the Fourth Semesters. Students will choose two Special Paper programmes out of the four offered. The End-Semester examination, in respect of every theory paper, will be of **Three hours duration**. The Internal Assessment will be made through **Mid-Sem Examination** in every paper and questions will be set from the section/unit assigned for Self Study.

Consolidated Chart of Courses of Study (M.A.)

SEMESTER I

Paper code	Title	Marks	Credits
ENGL C101	BRITISH DRAMA: Renaissance to Restoration	100	4
ENGL C102	BRITISH POETRY: 16 th to 19 th Century	100	4
ENGL C103	BRITISH FICTION: 18 th & 19 th Century	100	4
ENGL C104	LITERARY ESSAYS AND THEORY	100	4
ENGL C105	LINGUISTICS	100	4

SEMESTER II

Paper code	Title	Marks	Credits
ENGL C201	TWENTIETH CENTURY FICTION	100	4
ENGL C202	SHORT STORIES	100	4
ENGL C203	MODERN DRAMA	100	4
ENGL C204	MODERN POETRY	100	4
ENGL C205	ELT	100	4
ENGL VAC 2	SOFT SKILLS	-	Non Credit

SEMESTER III

Paper code	Title	Marks	Credits	Note
Under CBCT, the students of the Department of English can opt one paper offered by any other department or the parent Department.				
ENGL CT 300	PROFESSIONAL AND ACADEMIC WRITING	100	4	
ENGL C301	MODERN INDIAN LITERATURE	100	4	
ENGL E302	SPECIAL PAPER: AMERICAN LITERATURE I: Philosophy, Poetry and Drama	100	4	A student is allowed to opt for any two Core Electives 302 or 304, and 303 or 305
ENGL E303	SPECIAL PAPER: GREEN STUDIES	100	4	
ENGL E304	SPECIAL PAPER: Translation: Vol. I		4	
ENGL E305	SPECIAL PAPER: Creative Writing: Vol. I		4	
ENGL E306	WOMEN POETS	100	4	
ENGL VAC	FILM	-	Non	

	APPRECIATION		Credit	
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SEMESTER IV

Paper code	Title	Marks	Credits	
ENGL C401	RACE AND GENDER	100	4	
ENGL C402	RESEARCH METHODS AND DISSERTATION	100	4	
ENGL C403	COMMONWEALTH LITERATURE	100	4	A student is allowed to opt for two Core Electives individually 404 or 407, and 405 or 408
ENGL E404	SPECIAL PAPER : AMERICAN LITERATURE II: Novel	100	4	
ENGL E405	SPECIAL PAPER : ECOLINGUISTICS	100	4	
ENGL E407	SPECIAL PAPER : Translation Vol. II	100	4	
ENGL E408	SPECIAL PAPER : Creative Writing Vol. II	100	4	
ENGL AC 406	Cultural Heritage of South Odisha	-	Non Credit	

Detailed Syllabus:

SEMESTER - ONE

ENGL C101: Paper I

PAPER	Paper code	Title	Remarks	Credits
1	ENGL C101	BRITISH DRAMA: Renaissance to Restoration		04
Course Outcome: The course seeks to introduce students to the early modern English reflected in literature of the Renaissance and the Elizabethan Age up to the Restoration. It helps students explore certain seminal classical texts of English literature.				
Unit		Topics to be taught		
I		William Shakespeare: i. <i>Hamlet</i> , ii. <i>King Lear</i>		
II		William Shakespeare: iii. <i>Tempest</i> iv. <i>A Midsummer Night's Dream</i>		
III	Self Study	Marlowe: <i>Doctor Faustus</i> Webster: <i>White Devil</i>		
IV		Wycherley: <i>The Country Wife</i> Congreve: <i>The Way of the World</i>		

Recommended Reading:

- *The Pelican Guide to English Literature*. Ed. Boris Ford. Vol 1
- *The Age of Chaucer English Literature in Context*. Paul Poplawski. Cambridge UP, 2008

- *Routledge History of Literature in English*. Ronald Carter & John Mc Rae. London: Routledge, 1997
- *Shakespeare for Beginners* by Brandon Toropov
- *English Literature* by Jonathan Bate (Ch. 7 “Shakespeare and the Dramatic Literature”)

ENGL C102: Paper II

PAPER	Paper code	Title	Marks	Credits
II	ENGL C102	BRITISH POETRY: 16th to 19th Century	100	04
Course Outcome: This course introduces students to the genesis of British poetry from Renaissance to 19th century. It aims at familiarizing the students with the English poetic tradition, making them read some representative texts and respond to them critically and aesthetically.				
Unit		Topics to be taught		
I		Edmund Spenser: <i>Faerie Queene</i> Book I John Milton: <i>Paradise Lost</i> , Book I		
II		Alexander Pope: <i>The Rape of the Lock</i> William Wordsworth: <i>The Prelude</i> Book I		
III	Self Study	John Keats: <i>Ode on a Grecian Urn</i> , <i>Ode to Autumn</i> P. B. Shelley: <i>Adonais</i>		
IV		Alfred Tennyson: <i>In Memoriam</i> (Sections to be taught: Sections I, II, B, VII, IX, XX, XXI, XV, XXVII, XXXI, XXXVII, XLI, XL, L, LVI, LV, LXXIII and XCV) Robert Browning: <i>Porphyria’s Lover</i> ; <i>Fra Lippo Lippi</i> Elizabeth Barrett Browning: <i>The Cry of the Children</i> ; <i>A Musical Instrument</i>		

Recommended Reading:

- *Routledge History of Literature in English*. Ronald Carter & John Mc Rae. London: Routledge, 1997
- Black, Joseph (Ed). : *The Broadview Anthology of British Literature* Concise Edition, Vol. A. Broadview Press, London, 2007.
- Corns, T N (ed.) *The Cambridge Companion to English Poetry*. Cambridge: University Press, 1973
- Ford, Boris ed. *The Pelican Guide to English Literature*. Vol 3. From *Donne to Marvell* in. Harmondsworth: Penguin Books, 1976.
- Parry, G.: *The Seventeenth Century: The Intellectual and Cultural Context of English Literature*. Harlow: Longman, 1989.
- Sherwood, T. G: *Fulfilling the Circle: A Study of John Donne’s Thought*, Toronto, Toronto Press, 1984.

ENGL C103: Paper III

PAPER	Paper code	Title	Marks	Credits
III	ENGL C103	BRITISH FICTION: 18th and 19th Century	100	4
Course Outcome: The course seeks to introduce students to the development of the modern novel as a literary genre. It also exposes them to many subgenres of the novel in 18 th century and 19 th century.				
Unit		Topics to be taught		
I		Richardson: <i>Pamela</i> Henry Fielding: <i>Tom Jones</i>		
II	Self Study	J. Swift: <i>Gulliver's Travels</i> Jane Austen: <i>Emma</i>		
III		George Eliot: <i>The Mill on the Floss</i> Charles Dickens: <i>A Tale of Two Cities</i>		
IV		Emily Bronte: <i>Wuthering Heights</i> Thomas Hardy: <i>The Mayor of Casterbridge</i>		

Recommended Reading:

- *English Literature in Context*. Paul Poplawski. Cambridge UP, 2008
- *Routledge History of Literature in English*. Ronald Carter & John Mc Rae. London: Routledge, 1997
- Norton Anthology of English Literature. Vol 2 (Head notes on the periods and authors featured in the paper)
- *English Literature*. Jonathan Bate (Ch. 4 “The Study of English”, Ch. 5 “Periods and Movements”)
- Terry Eagleton, *The English Novel*

ENGL C104: Paper IV

PAPER	Paper code	Title	Remarks	Credits
IV	ENGL C104	LITERARY ESSAYS AND THEORY		4
Course Outcome: The course aims at acquainting students with various concepts of literary criticism. It will improve their ability to read critically and interpret texts while gaining appreciation for different literary genres and theories of interpretation.				
Unit		Topics to be taught		
I	Self Study	T.S Eliot : <i>Hamlet</i> Arthur Symons: <i>The Symbolist Movement in Literature</i> (Introduction-pp- 01-09)		
II		Derrida : Structure, Sign and Play in the Discourse of the Human Sciences Roman Jakobson : “ The Metaphoric and Metonymic Poles”.		
III		Ania Loomba: <i>Colonialism/Postcolonialism</i> [Situating		

		Colonial and Postcolonial Studies, pp-01-103] “ Feminist Philosophy ” from Stanford Encyclopedia of Philosophy. Sections 1, 2 & 3 only.		
IV		<i>Theories of Magical Realism</i> (pp. 03-66) Toni Morrison- <i>Playing in the Dark: Whiteness and the Literary Imagination</i> [Black Matters pp-1-28 only]		

Recommended Reading:

- Petru Golban and Estella Antoaneta Ciobanu: Short History of Literary Criticism
https://www.researchgate.net/publication/273443020_A_Short_History_of_Literary_Criticism
- Arthur Symons: The Symbolist Movement in Literature. <http://sul-derivatives.stanford.edu/derivative?CSNID=00000498&mediaType=application/pdf>
- Theories of Magical Realism
https://www.academia.edu/30614825/Theories_of_Magical_Realism
- Ania Loomba: Colonialism/Postcolonialism <http://cachescan.bcub.ro/13-07-2016P/558145.pdf>
- Feminist Philosophy. Stanford Encyclopedia of Philosophy.
<https://plato.stanford.edu/entries/feminist-philosophy/>
- Toni Morrison- *Playing in the Dark: Whiteness and the Literary Imagination*
https://engl104aucsb.files.wordpress.com/2014/05/playing_in_the_dark_morrison.pdf
- Gayatri C. Spivak: Can the Subaltern Speak?
http://abahlali.org/files/Can_the_subaltern_speak.pdf

ENGL C105: Paper V

PAPER	Paper code	Title	Marks	Credits
V	ENGL C105	LINGUISTICS	100	4
<p>Course Outcome: Since language is an unavoidable component of human interaction, this course will advance the knowledge of the students about the basics of development of language both spoken and written in English. The students will understand the nuances of English language spoken globally and improve their LSRW skills.</p>				
Unit		Topics to be taught		
I	Self Study	Definition of language, Language Change, Language Variation , Register, Pidgin, Creole, Isogloss, Dialect, Idiolect Difference between Englishes (British, American and Indian).		
II		Phonetics: <i>i.</i> Classification of Speech Sounds, <i>ii.</i> Vowels and Consonants, Problem		

		Sounds for Indian Speakers, iii. Syllable structure, iv. Phonemes and Allophones, v. Supra-segmental features- Stress, Rhythm, Intonation.		
III		Morphology : Morphemes, Allomorphs, Word Formation, Derivation and Inflection, Borrowing and Coinage. Semantics: Synonymy, Antonymy, Hyponymy, Ambiguity, Compound words		
IV		Syntax: Phrase, Clause, Sentence Deep Structure, Surface Structure Immediate Constituent (IC)Analysis, Transformation Generative (TG) Grammar		

Recommended Reading:

- Shruti Das. Contemporary Communicative English, S.Chand Publications, 2013
- Ferdinand de Saussure. Course in General Linguistics
<https://pdfs.semanticscholar.org/cb41/a70d25abce8718dd680894c8c68edfb3ffe5.pdf>
- R. H. Robins. General Linguistics, Longman London, 1991
- David Crystal. Linguistics, Penguin Books, 1971
- John Lyons. Language and Linguistics: An Introduction, CUP,1981
- John Lyons. Introduction to Theoretical Linguistics, CIUP, London, 1968
- A.C. Gimson. Introduction to the Pronunciation of English, London, Arnold,1970
- P. Ladfoged. A Course in Phonetics, Harcourt Brace Jovanoich, 1975
- Noam Chomsky. Syntactic Structure, The Hague, Mouton, 1957
- G.N. Leech. Semantics, Harmondsworth, Penguin,1971

SEMESTER TWO

ENGL C201: Paper VI

PAPER	Paper code	Title	Marks	Credits
VI	ENGL C201	TWENTIETH CENTURY FICTION	100	4
Course Outcome: This course examines the work of key novelists of the 20 th century from modernism to postmodernism, introducing the students to complexities in form and technique in representing the socio cultural aspects of society depicted therein.				
Unit		Topics to be taught		
I		Joseph Conrad: <i>Lord Jim</i> D.H. Lawrence: <i>The Rainbow</i>		
II	Self Study	Virginia Woolf: <i>Mrs Dalloway</i> Evelyn Waugh: <i>Brideshead Revisited</i>		
III		James Joyce: <i>A Portrait of the Artist as a Young Man</i> George Orwell: <i>Nineteen Eighty-four</i>		

IV		Anthony Burgess: <i>A Clockwork Orange</i> Kazuo Ishiguro: <i>The Remains of the Day</i>		
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Recommended Reading:

- *Pelican Guide to English Literature: Vol. 7. The Modern Age* (ed.) Boris Ford
- *Routledge History of Literature in English*. Ronald Carter & John Mc Rae. London: Routledge, 1997
- *English Literature*. Jonathan Bate (Ch. 5 “Periods and Movements”)
- *Modernism*. Critical Idiom. By Peter Faulkner
- *Modernism*. New Critical Idiom. By Peter Childs

ENGL C202: Paper VII

PAPER	Paper code	Title	Marks	Credits
VII	ENGL C202	SHORT STORIES	100	4
Course Outcome: This course will familiarise students with the craft and stylistic features of short stories, analyzing them with a focus on narrative technique to understand ways in which different writers have addressed issues of plot, character, place and theme.				
Unit		Topics to be taught		
I		Gabriela Tucan: “What Is A Short Story Besides Short? Questioning Minds In Search Of Understanding Short Fiction” Michael Bassler: “Theories and Typologies of the Short Story” [pp 41-64]		
II	Self Study	Anton Chekov: The Bet; At Christmas Time Flannery O’Connor: A Good Man is Hard To Find Katherine Mansfield: The Wind Blows; Bank Holiday		
III		James Baldwin: Sonny’s Blues; Going to meet the Man John Cheever: The Swimmer Carys Davis: The Quiet Alice Munro: Runaway		
IV		Rabindranath Tagore: The Hungry Stone; The Postmaster S H Manto: Toba Tek Sing Jhumpa Lahiri: The Interpreters of Malady; A choice of Accommodation		

Recommended Reading:

- GabrielaTucan:https://www.researchgate.net/publication/276424471_What_is_a_Short_Story_Besides_Short_Questioning_Minds_in_Search_of_Understanding_Short_Fiction
- Michael Bassler: Theories and Typologies of the Short Story
https://www.academia.edu/26536661/Basseler_Theories_and_Typologies_of_the_Short_Story_2011_.pdf?auto=download
- <https://www.katherinemansfieldsociety.org/short-stories-by-katherine-mansfield/>
- James Baldwin : Going to Meet the Man, Penguin
- Alice Munro: “Boys and Girls” www.giuliotortello.it/shortstories/boys_and_girls.pdf
- Alice Munro -Runaway: <https://www.newyorker.com/magazine/2003/08/11/runaway-4>

- <https://icpla.edu/wp-content/uploads/2014/08/Adichie-CN-The-Thing-Around-Your-Neck.pdf>

ENGL C203: Paper VIII

PAPER	Paper code	Title	Marks	Credits
VIII	ENGL C203	MODERN DRAMA	100	4
Course Outcome : This course will familiarise students with the major trends and experiments of the movement of drama and theatre. The movements like Drama of Ideas, Expressionism, Epic Theatre, the Theatre of the absurd, Off- Off- Broadway and modern Indian theatre will acquaint the students with the great dramatists, topical discussion through dialogues and screen settings and enrich their soft skills				
Unit		Topics to be taught		
I	Self Study	Osborne: <i>Look Back in Anger</i> Beckett: <i>Waiting for Godot</i>		
II		G.B. Shaw: <i>Man and Superman</i> T.S. Eliot: <i>The Cocktail Party</i>		
III		Girish Karnad: <i>Tughlaq</i> Manjula Padmanabhan: <i>Harvest</i>		
IV		Lorrain Hansbury: <i>A Raisin in the Sun</i> Edward Albee: <i>Who is afraid of Virginia Woolf</i>		

Recommended Reading:

- Eric Bentley. *The Theory of the Modern Stage*
- <https://neoenglish.wordpress.com/2010/12/16/modern-dramatists/>
- Posthumanism, Cyberculture & Postcolonialism in Manjula Padmanabhan's «Harvest»
https://www.researchgate.net/publication/308910980_Posthumanism_Cyberculture_Postcolonialism_in_Manjula_Padmanabhan's_Harvest
- Babu, Manchi Sarat. *Indian Drama Today: A Study in the Theme of Cultural Deformity*. New Delhi: Prestige Books. 1997
- Dass, Veena. *Experiment and Innovation in Modern Indian Drama in Translation: The Plays of Mohan Rakesh, Badal Sircar, Vijay Tendulkar and Girish Karnad Studies in Contemporary Indian Drama*. Eds. Sudhakar Pandey and Freya Taraporewala. New Delhi: Prestige Books pp. 64-74. 1990.
- Karnad, Girish. *Collected Plays: Tughlaq, Hayavadana, Bali: The Sacrifice, Nagamandala (Play with a Cobra)*. Vol. One. Oxford: Oxford UP, 2005.

ENGL C204: Paper IX

PAPER	Paper code	Title	Marks	Credits
IX	ENGL C204	MODERN POETRY	100	4
Course Outcome: This course offers an introduction to modern poetry in English with an emphasis on experimental verse. It discusses the characteristic techniques, concerns, and major practitioners of modern poetry. The authors discussed range from Yeats, Eliot, Stevens to African American Poets and Indian Poets with the poetry of World War One, Imagism, and the Harlem Renaissance.				

Unit		Topics to be taught		
I		<p>W.B. Yeats: Selected Poems: “Among School children”, “Easter 1916”, “The Second Coming”, “Sailing to Byzantium”, “The Tower” and “Leda and the Swan”</p> <p>Langston Hughes: God, Remember, You and your whole Race.</p> <p>George Santayana: I would I Might Forget That I am I; There May be Chaos Still Around the World</p>		
II		T.S. Eliot: <i>The Wasteland</i>		
III	Self Study	Rabindranath Tagore: <i>Gitanjali</i>		
IV		<p>Wallace Stevens: Of Modern Poetry, Sunday Morning</p> <p>Jayanta Mahapatra: Of Independence Day, The Storm</p> <p>A. K. Ramanujan: Pain, In March, [How can One Write about Bosnia]</p>		

Recommended Reading:

- Ramazani, Jahan, Richard Ellmann, and Robert O’Clair, eds. *The Norton Anthology of Modern and Contemporary Poetry*. Vol. 1, *Modern Poetry*. New York: W. W. Norton & Company, 2003.
- I would I Might Forget That I am I; There May be Chaos Still Around the World
<https://www.poetryfoundation.org/poets/george-santayana#tab-poems>
- Jayanta Mahapatra: The Life, Of Independence Day, A Kind of Happiness, The Storm
<https://www.poetryfoundation.org/poetrymagazine/browse?contentId=33212>
- A.K.Ramanujan: Pain, In March, Sonnet, [How can One Write about Bosnia]
<https://www.poetryfoundation.org/poetrymagazine/browse?contentId=39003>
- God, Remember, I look at the World, You and your whole Race.
<https://www.poetryfoundation.org/search?query=Langston%20Hughes&refinement=poe ms>

ENGL C205: Paper X

PAPER	Paper code	Title	Marks	Credits
X	ENGL C205	ELT [English Language Teaching]	100	4
Course Outcome: This course will make the students understand the various skills of English Language teaching and how to teach and evaluate English as a Second language in India. The students will learn to frame graded syllabus under a desired/given curriculum				
Unit		Topics to be taught		
I		<p>a. Curriculum and Syllabus; Syllabus - Diagnosis and Design, Curriculum Development</p> <p>b. Methods, Approaches and Techniques of Teaching English as a Second</p>		

		language c. Language acquisition, Language learning		
II	Self Study	a. Teaching of Skills: <i>i.</i> Listening. <i>ii.</i> Speaking. <i>iii.</i> Reading. <i>iv.</i> Writing b. Teaching of language through literature (Case Study); CMC (Computer Mediated Language).		
III		Classroom Situation and Teacher Development: a. Teaching in difficult situation b. Designing the classroom – Learned centred, Smart classrooms c. Teacher Training/Development d. Use of ICT in classroom		
IV		Lesson Plan and Lesson Note Preparation, Evaluation/ Assessment		

Recommended Reading:

- Sinha, S. English Language Teaching: Prospects. Problems and Suggestions, New Delhi: Mangal Deep. 2005
- Richards, J.S. Language Teaching Matrix, Cambridge: CUP,1990
- Richards, J.S. & Roddgers, T.S. Approaches and Methods in Language Teaching, Cambridge: CUP, 2002
- Richards, J.S. Curriculum Development in Language Teaching, New York : CUP, 2001
- Willis, J. A Framework for Task-based learning, New York : Longman, 1996
- Woods, C. Professional Development for Teachers : Teaching and Assessing Skills in Foreign language, Cambridge : CUP,2005
- N.S. Prabhu. Second Language Pedagogy, Oxford ELBS, 1991
- M.L. Tickoo, Teaching and Learning English, Longman, New Delhi, 2003
- Das, Shruti. Contemporary Communicative English. S. Chand, 2014

ENGL VAC 2: SOFT SKILLS

PAPER	Paper code	Title	Marks	Credits
Value Added Course	ENGL VAC 2	Soft Skills	-	Non-Credit
Course Outcome: This course is designed to enable students to develop and understand interpersonal skills. Students will benefit from learning about effective communication; receiving and providing feedback to achieve goals; and recognizing as well as solving barriers in a professional space while developing an aptitude for critical/creative thinking.				
Unit		Topics to be taught		
I		1. Soft Skills 2. Personality Development		

II		Interviews and Group Discussions		
III		<ol style="list-style-type: none">1. Emotional Intelligence2. Stress Management3. Time Management		
IV		<ol style="list-style-type: none">1. Negotiation Skills2. Problem Solving		

Recommended Reading:

- Shruti Das, Form and Finesse: Business Communications and Soft Skills, Hyderabad: Orient Blackswan,2017

Semester Three

ENGL CT 300: Paper XI

PAPER TO BE OUTSOURCED FOR THE STUDENTS OF OTHER DEPARTMENTS UNDER CBCT SCHEME

This Allied Elective paper is meant for the students of other Departments and parent Department under the Choice Based Credit Transfer Scheme [Outward]

Paper	Paper code	Title	Marks	Credits
ENG – CTBT II	ENGL CT 300	PROFESSIONAL AND ACADEMIC WRITING	100	04
Course Outcome: This course will make students ready for the competitive outside world. It will hone their writing skills and acquaint them with the various kinds of writing used in academic and professional fields.				
		Topics to be taught		
I		Feature Writing, News Article, Content Writing, Writing an Advertisement		
II		Proposal Writing, Report Writing, Business Communication, Noting, Drafting, Editing		
III	Self Study	Curriculum Vitae, Covering Letter, MS Power Point Presentation, Poster Presentation		
IV		Script writing, Journal/Diary writing, Writing Book Review, Preparing Brochures		

Recommended Reading:

- Shruti Das, Form and Finesse, Hyderabad: Orient Blackswan, 2017
- A R Parhi. Indian English Through Newspapers. Concept, 2008.
- J.V. Vilanilam. More Effective Communication, 2000
- E. H. Mc. Grath, Basic Managerial Skills for All, 1999
- P. Sainath. Everybody Loves a Good Drought, 1997
- Robert M. Knight. A Journalistic Approach to Good Writing: The Craft of Clarity
- Judith Butcher, Copy Editing, Cambridge University Press
- Rastogi, Encyclopaedia of Professional Journalism
- N.C. Pant, Modern Journalism: Principles and Practices

ENGL C301: Paper XII

PAPER	Paper code	Title	Marks	Credits
XII	ENGL C 301	MODERN INDIAN LITERATURE	100	4

Course Outcome: The course will focus on introducing students to the richness and diversity of Indian life and culture reflected in modern Indian literature written in Bhasha languages and also in English.				
Unit		Topics to be taught		
I	Self Study	<u>The Modern Indian Essay</u> A. K. Ramanujan: “Is there an Indian Way of Thinking? An Informal Essay” from <i>Collected Essays</i> G. N. Devy: introduction to <i>After Amnesia</i> , pp. 1-5, from <i>The G. N. Devy Reader</i>		
II		<u>The Modern Indian Novel</u> Gopinath Mohanty: <i>Paraja</i> Easterine Kire: <i>Son of the Thundercloud</i>		
III		<u>Modern Indian Life Writing</u> Milkha Singh: <i>The Race of My Life</i> Urmila Pawar: <i>The Weave of My Life: A Dalit Woman’s Memoirs</i>		
IV		Mahasveta Devi: <i>Draupadi</i> [Tr. By Gayatri Chakravorty Spivak] Hansda Sowvendra Shekhar: “The Adivasi Will Not Dance” from <i>The Adivasi Will Not Dance</i>		

Recommended Reading:

- A. K. Ramanujan “Is there an Indian Way of Thinking? An Informal Essay” *Collected Essays*, OUP, 2013
- “Decolonising the Indian Mind” by Namwar Singh. Tr. Harish Trivedi *Indian Literature*, Vol. 35, No. 5 (151) (Sept.-Oct., 1992), pp.145-156
- Chaudhuri, Amit. *The Picador book of modern Indian literature*. Picador, 2001.
- G.N. Devy, *After Amnesia: Tradition and change in Indian Literary Criticism*. Orient Blackswan, 2009.
- Kire, Easterine. *When the River Sleeps*. New Delhi: Zubaan, 2014.
- Mahasweta Devi: *Draupadi*
- Namvar Singh and Harish Trivedi. “Decolonising the Indian Mind.” *Indian Literature*, vol. 35, no. 5 (151), 1992, pp. 145–156. *JSTOR*, www.jstor.org/stable/23337172.
- Hansda Sowendra Shekhar . *The Adivasi Will Not Dance: Stories*. 1. Speaking Tiger Books, 2015.
- <https://archive.org/details/parajanovel00maha>
- <http://lucknowbookclub.com/wp-content/uploads/2018/03/Pawar-Urmila-The-Weave-of-My-Life--a-Dalit-Womans-Memoirs-2010.pdf>
- <http://profcohen.net/reli113/uploads/texts/ramanujan.pdf>
- <http://www.gbv.de/dms/goettingen/32767394X.pdf>
- <https://www.scribd.com/document/255297388/The-Race-of-My-Life-by-Milkha-Singh-and-Sonia-Sanwalka#download>
- <https://scroll.in/article/811931/draupadi-mahasweta-devis-memorable-short-story-and-still-chillingly-relevant>

- <https://academiccommons.columbia.edu/doi/10.7916/D86H4V2T/download>
- https://warwick.ac.uk/fac/arts/english/currentstudents/undergraduate/modules/fulllist/special/newlits/the_ adivasi_will_not_dance.pdf

**SPECIAL PAPER PROGRAMMES
(CORE ELECTIVES)**

Course Outcome - Each special paper programme shall be in TWO papers, each carrying 100 marks. As specified in the consolidated chart of the courses above, One paper each shall be devoted to each special paper programme under Semester Three and similarly in Semester Four.

FOUR SPECIAL PAPER PROGRAMMES are available to the students: namely (i) American Literature (ii) Translation Studies, (iii) Green Studies and (iv) Creative Writing. The students will be ordinarily taught the American Literature and Green Studies SPECIAL PAPER PROGRAMMES under which they will study TWO theory papers each [each carrying 100 marks] as specified below:

SEMESTER THREE

ENGL C302: Paper XIII (AL)

Paper	Paper code	Title	Marks	Credits
XIII(AL)	ENGL C302	SPECIAL PAPER AMERICAN LITERATURE I: Philosophy, Poetry and Drama	100	04
Course Outcome: This course will acquaint the students with American Literature through a study of selected texts. It will also develop in the student's the ability to interpret, analyse and evaluate American Literature in the context of world literatures in English and relate them to the developments in other literatures of the World.				
Unit		Topics to be taught		
I		Emerson: "The American Scholar", "Self reliance", Thoreau: Civil Disobedience		
II	Self-Study	Walt Whitman: "Song of Myself" (from <i>Leaves of Grass</i>) Selected Poems of Robert Frost: "The Silken Tent," "Moving," "Mending Wall," "After Apple Picking," "The Gift Outright"		
III		Eugene O' Neill : <i>Desire Under the Elms</i> A Miller: <i>The Crucible</i>		
IV		Tennessee Williams: <i>A Streetcar Named Desire</i> Sam Shepard: <i>Curse of the Starving Class</i>		

Recommended Reading:

- *Pelican Guide to English Literature*. Vol. 9. *American Literature*. Ed. Boris Ford
- *Highlights of American Literature*. Dr. Carl Bode (USIS)
- *A Short History of American Literature*, Krishna Sen and Ashok Sengupta. Orient BlackSwan, 2017
- *The Story of American Literature*. By Ludwig Lewisohn
- *Norton Anthology of American Literature*. (Head notes on authors and periods to be read)

ENGL E303: Paper XIV (GS)

Paper	Paper code	Title	Marks	Credits
XIV(AL)	ENGL E 303	SPECIAL PAPER: GREEN STUDIES	100	04
Course Outcome: This interdisciplinary paper will introduce the students to Ecocriticism, which is one of the most relevant critical theories of the present times. Through ecocritical theories and literary texts students will be trained to approach social issues eco-critically				
Unit		Topics to be taught		
I	Self Study	i. Introduction to Ecocriticism- Definition, Scope and Importance of Ecocriticism ii. Oikopoetics- Oikos – Integrative Oikos – Hierarchic Oikos – Anarchic Oikos		
II		Rachel Carson: “A Fable for Tomorrow” from <i>Silent Spring</i> R W. Emerson: “Nature”, Barbara Kingsolver: <i>Flight Behaviour</i>		
III		Deep Ecology-Basic Principles - Biocentric Equality – Naess and Sessions – Self Realization Amitav Ghosh: <i>The Hungry Tide</i>		
IV		D.H. Lawrence: <i>Snake</i> Yann Martel: <i>Life of Pi</i>		

Recommended Reading:

- Amitav Ghosh: *The Great Derangement* London, Penguin 2016
- R. W.Emerson:Nature <https://emersoncentral.com/texts/nature-addresses-lectures/nature2/chapter1-nature/>
- Glotfelty, Cheryl & Harold Fromm. *The Ecocriticism Reader*. Athens: The U of Georgia P, 1996. Print
- Bate, Jonathan. *Romantic Ecology: Wordsworth and the Environmental Tradition*. London: Routledge, 2013. Print
- Devall, Bill and George Sessions. *Deep Ecology: Living as if Nature Mattered*. Salt Lake City, Utah: Peregrine Smith, 1985.
- Berg, Peter. Raymond Dasmann. *Reinhabiting California*. *Resurgence & Ecologist* Vol 7 399-401, Dec 1977

- Andruss, Van. et al. Home! A Bioregional Reader edited. Philadelphia. New Society Publishers, 1990. Print
- Garrard, Greg. *Ecocriticism* New Critical Idiom Series. London: Routledge 2004. Print
www.barretthonors.asu.edu www.greenschool.org www.centerforgreenschools.org

ENGL E304: Paper XV

PAPER	Paper code	Title	Marks	Credits
XI	ENGL C304	WOMEN POETS	100	4
<p>Course Outcome: The course seeks to acquaint the students with the works of women poets from different cultures and nations in various themes and styles. Further, it seeks to make them critically aware of the issues relating to the workings of patriarchy, issues of gender, and relations of desire and power.</p>				
Unit		Topics to be taught		
I		<p>Sappho: Charaxos and Larichos, One Girl</p> <p>Phillis Wheatley: On Imagination, On being brought from Africa to America, A Hymn to the Evening</p>		
II		<p>Emily Dickinson: “Hope” is thing with Feathers; Tell all the truth but tell it slant; Because I could not Stop for Death</p> <p>Christina Rossetti: Dreamland; A Better Resurrection; The Three Enemies</p>		
III	Self Study	<p>Eavan Boland: Witness, My country in Darkness</p> <p>Sylvia Plath: Daddy, Dialogue between Ghost and Priest</p> <p>Sarojini Naidu: In the Bazaars of Hyderabad, In Salutation to the Eternal Peace</p>		
IV		<p>Wisława Szymborska: “Utopia”, “On Death, without Exaggeration”</p> <p>Mary Oliver: Wild Geese, Invitation</p>		

Recommended Reading:

- **Sappho:** Charaxos and Larichos, One Girl
<https://www.poetryfoundation.org/search?query=Sappho&page=2>
- **Phillis Wheatley:** On Imagination, On being brought from Africa to America, A Hymn to the Evening
<https://www.poetryfoundation.org/search?query=Phillis+Wheatley>
- **Motifs and themes in Emily Dickinson's poems** <http://www.worldscientificnews.com/wp-content/uploads/2019/02/WSN-123-2019-220-233.pdf>
- **Christina Rossetti:** <https://www.poetryfoundation.org/poets/christina-rossetti#tab-poems>
- **Wisława Szymborska:**
<https://www.nobelprize.org/prizes/literature/1996/szymborska/poetry/>
- **Mary Oliver:** <https://www.poetryfoundation.org/poets/mary-oliver>

PAPER	Paper code	Title	Marks	Credits
Value Added Course	ENGL VAC 3	Film Appreciation	-	Non-Credit
<p>Course Outcome: Students will be able to understand and approach cinema as cultural texts. They will deconstruct and decipher the various signifiers involved in producing the popular culture of our times wherein cinema acts as a powerful device. They will also be motivated to treat cinema as a distinct language and explore the various narrative styles of prominent filmmakers.</p>				
Unit		Topics to be taught		
I		Brief History of Cinema		
II		The Language of Cinema		
III		<ol style="list-style-type: none"> 1. The Cinema of Satyajit Ray 2. The Cinema of Wong Kar-Wai 		
IV		<ol style="list-style-type: none"> 1. Shakespeare in Cinema 2. Cinema and Popular Culture 		

Recommended Reading:

Cinema Studies: The Key Concepts. By Susan Hayward

<https://cpb-ap-se2.wpmucdn.com/thinkspace.csu.edu.au/dist/5/1410/files/2015/10/Cinema-Studies-Key-Concepts-1-289afca.pdf>

Recommended Watchlist:

Adaptation of Shakespeare's Tragedies: Maqbool Directed by Vishal Bhardwaj, Omkara Directed by Vishal Bhardwaj, Haider Directed by Vishal Bhardwaj

Adaptations of Romeo and Juliet: 10ml Love Directed by Sharat Katariya, Ram Leela Directed by Sanjay Leela Bhansali, Qayamat se Qayamat Tak Directed by Mansoor Khan, Ek Dooje Ke Liye Directed by K. Balachander,

Aparajito Directed by Satyajit Ray

In The Mood For Love Directed by Wong Kar-Wai

SEMESTER FOUR

(CORE COURSES)

ENGL C401: Paper XVI

paper	Paper code	Title	Marks	Credits
XVI	ENGL C401	RACE AND GENDER	100	04
Course Outcome: This course will introduce students to the intersection between ideology, discrimination and oppression on race and gender principles. It will expose the students to the relationship between oppressed minority status and reading.				
		Topics to be taught		
I	Self-Study	Arundhati Roy: <i>The God of Small Things</i>		
II		Chinua Achebe: <i>Things Fall Apart</i>		
III		Alice Walker: <i>The Color Purple</i>		
IV		Laxminarayan Tripathy: <i>Me Hijra, Me Laxmi!</i>		

Recommended Reading:

- Michael Awkward. Race, Gender and the Politics of Reading. *Black American Literature Forum*, 1988 – JSTOR
- Mary Eagleton ed. Feminist Literary Theory: A Reader
<http://www.gbv.de/dms/goettingen/183662008.pdf>
- Nikki Sullivan. *A Critical Introduction to Queer Theory* New York Univ Press 2003
- Examining Queer Elements and Ideologies in LGBT Themed Literature: What Queer Literature Can Offer Young Adult Readers
<https://journals.sagepub.com/doi/pdf/10.1177/1086296X15568930>

ENGL C402: Paper XVII

Paper	Paper code	Title	Marks	Credits
XVII	ENGL C402	Research Methods and Dissertation	100	04
Course Outcome: This course intends to introduce the students to the concept of research and with the terminologies associated with research and to highlight the significance of systematic planning and execution of research activity. Also to prepare the student to undertake a research project in order to practice the use of various tools and techniques of research.				
		Topic		
I	Self Study	Research and the Initial Issues Research as systematic investigation, Searching for and locating research questions; Finding the general background about research problem/question: review of existing literature and applicable theories. Refining the research problem/question; formulating its rationale and objectives. Writing a research synopsis Literature review: Selecting review areas based on the research objectives. Primary, secondary and tertiary sources, and related theory/s (sources: library, databases, online sources, previous		

	<p>research, archives, media and such others)</p> <p>Hypotheses and formulation of research design: Formulating hypotheses based on research objectives. Formulation of research design: qualitative, quantitative, combinatory; steps in research design- Theory application.</p> <p>Data collection tools: surveys, questionnaires, interviews, observation checklists, review checklists, comparison tools, text analysis tools. Data analysis and interpretation</p> <p>Documentation: MLA/APA citation: in-text and works cited pages</p> <p>Plagiarism and related problems</p>
<p>DISSERTATION = 80 marks</p> <p>Each students will prepare a dissertation in about 4000 words (approx.) on a topic of literary and critical interest under the supervision of a teacher</p>	

Recommended Reading:

- MLA Handbook 9th Edition
https://www.academia.edu/39175934/MLA_Handbook_NINTH_EDITION
- APA referencing 6th Edition <https://aewintecsitefinity.blob.core.windows.net/sitefinity-storage/docs/default-source/study-at-wintec/apa.pdf>
- A Quick Guide to Harvard Referencing <https://www.canterbury.ac.uk/students/docs/study-skills/resource-1-Harvard-Referencing-Guide.pdf>
- Research Methods Handbook <https://www.cles.org.uk/wp-content/uploads/2011/01/Research-Methods-Handbook.pdf>

ENGL C403: Paper XVIII

Paper	Paper code	Title	Marks	Credits
XVIII	ENGL C403	COMMONWEALTH LITERATURE	100	04
<p>Course Outcome: Commonwealth literature and Postcolonial literature are terms used to describe the literatures of the states under the former British empire. There is growing importance in the world for this kind of literature because of the use of a different kinds of English with almost a common theme. This course will familiarise the students to the existence of literature beyond the British and English narratives.</p>				
		Topics to be taught		
I		Salman Rushdie: <i>Shame</i> Fakir Mohan Senapati: <i>Six Acres and A Third</i>		
II	Self Study	Bapsi Sidhwa: <i>Ice Candy Man</i> Khaled Hosseini: <i>The Kite Runner</i>		
III		Michael Ondaatjie: <i>The English Patient</i> Tehmima Anam: <i>The Good Muslim</i>		
IV		J.M. Coetzee: <i>Disgrace</i> Margaret Atwood: <i>The Handmaid's Tale</i>		

Recommended Reading:

- L. McLeod. *The Commonwealth Pen: An Introduction to the Literature of the British Commonwealth* Cornell University Press, 1961
- Michael Gorra *After Empire: Scott, Naipaul, Rushdie* University of Chicago Press, 1997
- Ian Baucom *Out of Place: Englishness, Empire, and the Locations of Identity* Princeton University Press, 1999
- Hena Maes-Jelinek ed. *Commonwealth Literature And The Modern World* [Maes_Commonwealth-Literature-and-the-Modern-World_1975.pdf](#)

ENGL E404: Paper XIX (AL)

Paper	Paper code	Title	Marks	Credits
XIV(AL)	ENGL E404	SPECIAL PAPER: AMERICAN LITERATURE II: Novel	100	4
Course Outcome: This paper seeks to expose the students to American classics and to a specialised genre with a view to help them have a broader critical outlook				
Unit		Topics to be taught		
I		N. Hawthorne: <i>The Scarlet Letter</i> Mark Twain: <i>Huckleberry Finn</i>		
II	Self Study	Ernest Hemingway: <i>A Farewell to Arms</i> Herman Melville: <i>Moby Dick</i>		
III		Harper Lee, <i>To Kill a Mockingbird</i> Ken Kessey: <i>One Flew Over The Cuckoo's Nest</i>		
IV		James Baldwin: <i>Go Tell it on the Mountain</i> Toni Morrison: <i>Sula</i>		

Recommended Reading:

- Lewisohn, Ludwig. *The Story of American Literature*. The Modern Library, N. Y.
- Horton, Rod & Herbert W. Edwards. *Backgrounds of American Literary Thought*. 3rd edition.
- Stewart, Randall(ed). *Living Masterpieces of American Literature*. Brown University
- Norton Anthology of American Literature. 8th edition.
- Das, Shruti. *From Margin to the Centre: A Toni Morrison Reader*. Mangalam, 2009.

ENGL E405: Paper XX (GS)

paper	Paper code	Title	Marks	Credits
XX(AL)	ENGL E405	SPECIAL PAPER: GREEN STUDIES: Ecolinguistics	100	04
Course Outcome: This course surveys contemporary literature that address the anthropocene				

from the ecolinguistic perspective. It will consider a range of cultural texts that imagine how our present and future worlds are/will be shaped by climate change and other factors affecting our environment and offer ways to approach this paradigm shift's challenges and possibilities through the discourse.

		Topics to be taught		
I		Introduction: Language as Ecosystem (Part 1 Chapter4 <i>The Routledge Handbook of Ecolinguistics</i>) Robin Morris Collin: <i>The Apocalyptic Vision, Environmentalism, and a Wider Embrace</i> (ISL,2006,Vol:13)		
II		Jayadeva's : Dasaavatar from <i>Gita Govindam</i> ; Green Spirituality: Horizontal Transcendence (Chapter1 Introduction)		
III	Self-Study	Vandana Shiva: <i>Water Wars</i> (Chapter 7: <i>Sacred Waters</i>)		
IV		Short Stories: Doris Lessing: <i>A Mild Attack of Locusts</i> , Ruskin Bond: Our Trees Still Grow in Dehra, Ernest Hemingway: <i>Big Two-Hearted River</i> , Saki: <i>The Music on the Hill</i>		

Recommended Reading:

- <https://faculty.washington.edu/mkalton/green%20spir1.htm>
- <https://academic.oup.com/isle/article/13/1/1/733832>
- <https://cws.journals.yorku.ca/index.php/cws/article/viewFile/8884/8061>
- <https://vc.bridgew.edu/cgi/viewcontent.cgi?article=2183&context=jiws>
- http://courseresources.mit.usf.edu/sgs/ang6469/canvas/module_7/read/The_Sacred_Water_s.pdf
- <http://www.arvindguptatoys.com/arvindgupta/stayingalive.pdf>
- http://seedbed.org/wp-content/uploads/2013/09/Shiva_Soil_not_Oil.pdf
- http://feministarchives.isiswomen.org/isispub/wia/wia1996-1/WIA19961_10EcoFeminism.pdf
- <https://halshs.archives-ouvertes.fr/halshs-00413983/document>
- Dasavatara Stotra [Jayadeva] : Shruti Das. Ecopolitics in the Dasāvātāra in Jayadeva's 'Gītāgovindam. Muse India 80 (Jul-Aug), 10
- <http://www.bhakthi.in/stotras.php?id=161>
- https://www.academia.edu/37564088/Ecopolitics_in_the_Das%C4%81vat%C4%81ra_in_Jayadevas_G%C4%ABtagovinda%E1%B9%83

II. Translation Studies SPECIAL PAPER PROGRAMME

(Total Marks: 200)

Course Outcome: Under this programme a student shall prepare TWO volumes of translation of certain literary work(s) of established Odia poets/dramatists/novelists/short story/autobiography writer(s) into English in a minimum of 10,000 words under the supervision of a subject expert

from among the members of the faculty. The two volumes shall be prepared under Semester Three and Semester IV as specified in the Consolidated Chart above.

However, only candidates with proven ability shall be encouraged to opt for the Translation Studies SPECIAL PAPER PROGRAMME subject to following conditions:

a. The candidate qualifies in a rigorous selection process including a written test followed by a viva voce test conducted by the Head of the Department which should be unanimously approved by the Staff Council of the Department.

b. Even after a student qualifies in the tests conducted, a subject expert should be willing to supervise him on the texts of his choice.

III. Creative Writing SPECIAL PAPER PROGRAMME

(Total Marks: 200)

Course Outcome: Under this programme a student shall prepare TWO volumes of CREATIVE WRITING in a minimum of 10,000 words under the supervision of a subject expert from among the members of the faculty. The two volumes shall be prepared under Semester Three and Semester IV as specified Consolidated Chart above.

However, only candidates with proven ability shall be encouraged to opt for the Translation Studies SPECIAL PAPER PROGRAMME subject to following conditions:

a. The candidate qualifies in a rigorous selection process including a written test followed by a viva voce test conducted by the Head of the Department which should be unanimously approved by the Staff Council of the Department.

b. Even after a student qualifies in the tests conducted, a subject expert should be willing to supervise him on the texts of his choice.

ENGL AC 406: CULTURAL HERITAGE OF SOUTH ODISHA

PAPER	Paper code	Title	Marks	Credits
Add-On Course	ENGL AC 406	Cultural Heritage of South Odisha	50	Non-Credit
Course Outcome: The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale.				
Unit		Topics to be taught		
I		Literary works of Kabi Samrat Upendra Bhanja		
II		Other Litterateurs of South Odisha		
III		Cultural Heritage of South Odisha		
IV		Folk Tradition of South Odisha		

**P.G. Course Curriculum
&
Syllabi-2023-24 & 2024-25
Department of History
Berhampur University**

Department of History:

The Department was established in 1968 and offers two year Master's degree course in History with specializations in Ancient Indian History, Medieval Indian History, and Modern Indian History. The Department has also been offering M.Phil. and Ph.D. programs in regular mode. Padma Shri K. C. Panigrahi was the first head of the Department and Head of the Heads (Chairman, PG Council). The M.Phil. course designed to provide theory and practical knowledge of research work in History was introduced in 1979-80. A one-year course in Tourism and Indian Monuments [DTIM] was introduced in 1984 as the first in the state. Only Post-Graduates in History, Culture & Archaeology are eligible to seek admission into the course (DTIM). This course is unique in India in the field of Tourism and Monuments. It imparts instructions on different aspects of Tourism and Monuments of India in general and Odisha in particular with field study and destination-oriented practical courses.

The Department has an Archival Cell that contains a large number of Gazetteers, Reports, journals, magazines, Odia literature, Proceedings, Private Papers, Textbooks of recent trends, and Rare Books relating to History, laws, medicine, religion, politics, science, art, and culture. The reference section caters to the needs of scholars who utilize the materials preserved in the Archival Cell.

Highly committed teachers have been engaged in teaching and research in various fields in general and regional history in particular since the inception of the Department. In recognition of the academic achievements of the Department, the U.G.C. has sanctioned the Special Assistance Programme (at the D.R.S. level) to the Department from the academic session 1999-2000. The Department has completed Phase-I and Phase-II levels, and the U.G.C. has further upgraded the SAP from Phase-II to Phase-III level for five years, i.e., from 01.04.2009

to 31.03.2014. The U.G.C. has also sanctioned the A.S.I.H.S.S. program, in addition to SAP, for its achievement in the first phase of SAP for five years from 2006-07.

The Department has been organizing National, International, and State Level Seminars, regularly conducting Refresher Courses/Conferences/Workshops. The teachers of the Department have earned International fame by visiting foreign countries as Visiting Fellows/Professors and participating in International Seminars and Conferences at regular intervals. The faculty members have been associated with the U.G.C., the U.P.S.C., different State P.S.C.s, and other prestigious organizations at national and state levels. Further, the teachers have taken up academic assignments as Resource Persons and Visiting Professors at different universities.

Besides these, the Department is also publishing a bi-annual research journal entitled *Studies in History and Culture (ISSN: 0971-9326)* of the international standard since 1993. Since 2006-07, the Department has published a yearly edited volume, Studies on Orissan History, under the A.S.I.H.S.S. program. During the last several years, departmental activities in teaching and research have increased considerably. In 2018 the Department completed 50 years and celebrated the Golden Jubilee year by organizing Distinguished Lecture Series and honoring and felicitating the former faculties of the Department. The Department has also organized its first History Alumni Meet in 2020. Currently, the following faculties are teaching in the Department along with other assignments of the University.

Faculties of the Department:

1. Dr. SadanandaNayak, Associate Professor, HoD
2. Dr.RamakantaBhuyan, Assistant Professor
3. Dr. Sankarsan Malik, AssistantProfessor
4. Dr. A. Sobharani, FieldAssistant

Facilities in Department:

The department is well equipped with infrastructural facility such as Smart Classrooms, Archive Cell, Library, Seminar Hall, Faculty Chambers, Computer lab, Office room, and Scholars room.

Syllabi-2023-24

Course Framework & Structure
SEMESTER-I

Course Name & Number	Course Title	Credits	Marks
HIST C101	World Civilizations	4	100
HIST C102	Ancient History of India-I	4	100
HIST C 103	Medieval Indian History (1206-1526AD)-I	4	100
HIST C104	History of Modern India -I	4	100
HIST C 105	History of Odisha (From Early Times to C.E. 1568AD)	4	100
<u>SEMESTER II</u>			
HIST C201	Ancient Indian History-II	4	100
HIST C 202	Medieval Indian History (1526-1800)-II	4	100
HIST C203	History of Modern India-II	4	100
HIST C 204	Modern World History	4	100
HIST C 205	History of Odisha (From 1569-C.E.1948)-II	4	100
HIST VAC C 206	Indian Monuments (Non-Credit Course)		
<u>SEMESTER III</u>			
HIST CT 300	Cultural History of India (CBCT)	4	100
HIST C 301	History of Science and Technology in India	4	100
HIST C 302	Historiography	4	100

HIST E 303	A-Socio-cultural History of Ancient India OR B-Studies of Early Medieval India 750-1206AD OR C-History of Constitutional and Administrative Development	4	100
HIST E 304	A-Socio-Cultural History of Early Odisha A- Or B- Medieval Odisha History: society and culture Or C- History of Progressive Modern Odisha	4	100
HIST VAC C 305	General Studies for Civil Services and Other Competitive Examinations(Non-Credit Course)		
<u>SEMESTER- IV</u>			
HIST C 401	Research Methodology	4	100
HIST C 402	Women's History of India	4	100
HIST E 403	A- History of Ancient India from 550-1200AD OR B- Cultural History of Medieval India OR C- History of Modern Education in India	4	100
HIST E 404	A- Economic History of Ancient India OR B- Socio, Economic and Religious Studies of Medieval India OR C- Socio-cultural History of Modern India	4	100
HIST C 405	Dissertation	4	100
Add-on 406	Cultural Heritage of South Odisha(Non-Credit Course)		

Details of Syllabus

**Course No. HIST C101,
Semester: I, Credits: 04**

**Course Name: World Civilizations
Core/Elective: CC**

Objective and brief description on course and expectations: This course is designed to provide knowledge about the ancient civilization of the world. Through this subject logical and analytical information on the development of human civilizations will be inculcated into the students mind. The rise and progress of the social, economic and political structures in the ancient world is an important subject to study and for better understanding of the present society.

Outcomes: Basic ideas and concept on human civilizations and progress and helpful for all competitive examinations and research for higher study and job.

Course Details

Chapter	Contents	
Unit-I	From Hunter Gatherers to Village Settlement- 1. Evolution of the Earth& Origin of Species. 2. Paleolithic Phase-Hunters& Gatherers, Tool Making Habit. 3. Neolithic Phase–Food Production-Agricultural Societies- Village Settlements.	I Credit
Unit-II	Ancient Egypt- 1. Importance of River Nile-Geographical feature, climate and people. 2. The political history, Society, Economy and religion. 3. Development of Art and Architecture, contribution of Ancient Egypt to the Human civilization.	I Credit

Unit-III	<ol style="list-style-type: none"> 1. The Geographical feature of Greece, the people and Climate - Development of city states- the Sparta and Athens- evolution of Athenian Government Pericle- Decline of City states. 2. The Society, Economy and Religion. 3. The contribution of ancient Greece to human Civilization- Philosophy, science, Medicine, literature, Drama and history. 	I Credit
Unit-IV	<ol style="list-style-type: none"> 1. The geographical feature, the climate and the people- the foundation of Rome Civilization- the early government systems- struggle between Plebician and Patricians. 2. The Political development in Rome- the fall of Republic and rise of Dictatorship-the society and economy and religion in ancient Rome. 3. The Contribution of Ancient Rome-the Roman laws, Art and Architecture, Literature- Science and Medicine and Philosophy. 	I Credit
Total	4Units	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES

1. Hewick, *The Story of Mankind*
2. J.E.Swain, *A History of World Civilization*
3. H.A.Davies, *An Outline History of the World*, London, 1969.
4. H.Neil & M.C.Willam, *A World of History*, Oxford, New York, 1907.
5. H.S.Baghela, *World of Civilization*
6. L. Doleposte, *Mesopotamian Civilisation*.
7. Moret, *The Nile and Egyptian Civilisation*.
8. R.L.Greavesetal, *Civilizations of the World*.
9. T.Dhanakoty&N.Subramanian,*Manandhisworks:AnIntroductiontoUniversalHistory,C hennai*, The National Publishing company, 1956,

10. V. Gordon Childe, *What happened in History*, Penguin, 1967.
11. W.S. Smith: *Art and Architecture of Ancient Egypt*, Baltimore, 1958
12. H.W.F. Sagga: *The Greatness that was Babylon*, London, 1962
13. C.L. Wooley: *The Sumerians*, Oxford, 1928
14. J.K. Davies: *Democracy and classical Greece*, Glasgow, 1978
15. H.G. Creel: *Chinese Thought from Confucius to Mao Tse-Tung*, Chicago, 1953
16. Theodor Mommsen: *The History of Rome*, Chicago, 1957
17. J.J. Pollitt: *Art and Experience in Classical Greece*, Cambridge, 1972

Details of Syllabus

Course No. HIST C102,

Course Name: Ancient Indian History-I

Semester: I, Credits: 04

Core/Elective: CC

Objective and brief description on course and expectations: This course is framed to provide knowledge about the ancient Indian History. It deals with prehistoric India's evolution of society and development of the Indian civilization. Aim of this paper is to acknowledge the students about the glorious culture of the country.

Outcomes: Knowledge and understanding about the ancient Indian history and its process of progress. Help for all competitive examinations, entrance examinations and research.

Course Details

Chapter	Contents	
Unit-I	1. The Pre-historic ages of India- Paleolithic Age and the human habitations in India 2. Mesolithic age and Neolithic culture in India, 3. Chalcolithic ages, Megalithic age and habitation in India	1 Credit

Unit-II	<ol style="list-style-type: none"> 1. Sources of Indian History- Archaeological, Literary and foreign Accounts 2. Indus Valley Civilizations- beginning of Indus age, people, extension and the features of urbanization 3. Harappa trade and commercial activities and Decline theories 	1 Credit
Unit - III	<ol style="list-style-type: none"> 1. Vedic Literature 2. Vedic Age- socio-economic, religious and political condition 3. Second Urbanization in India 	1 Credit
Unit-IV	<ol style="list-style-type: none"> 1. Mahajanapadas-political condition of Northern India 2. Rise of Magadha- rise and factors 3. Alexander's Invasions in India – Causes, and effects 	1 Credit
Total	4units	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES:

A.J.Toynbee, : *A Study of History (12volumes)*

A. Wesley Rohem, *etal* : *The Record of Mankind* ,Health and Company,Boston,1952.

P.N.Choora, B.N.Puri, M.N.Das, RajeshKochhar,: *Socio-economic and Cultural History of India*, 3 Vols, Macmillan, Delhi,1974

R.S. Sharma, :*Early Medieval Indian Society: A Study in Feudalization*, New Delhi, Reprint, 2011

V.A.Narayan, :*Social History of Modern India, Meerut,1972.*

Bipan Chandra, :*Rise and Growth of Economic Nationalism in India, Delhi, 196*

A.L.Basham, :*The Wonder that was India, Rupand Co.Calcutta,1971*

R.C.Majumdar(ed)., : *The History and Culture of Indian People,*

BharatiyaVidyaBhaban, Bombay , Vols. I, II, III, & IV

Will Durant, :*The Story of Civilization (vols.I&II)*

Details of Syllabus

Course No. HIST C103 Course Name: Medieval Indian History (1206-1526AD) -I

Semester: I, Credits: 04 Core/Elective: CC

Objective and brief description on course and expectations: This course is aims to provide basic idea about the medieval India. its political structure, and economic features are highlighted to make students conceptually clear about the development of sultanate administration and different revenue systems introduced in India. Sources to study and writing medieval India is also given important to establish a scientific analysis of the periods. New spiritual ideology related Islam developed during these periods is given important. The impact of sultanate administration on Indian society would be taught. It's expected that student can understand the nature of the political system and economic feature of sultanate of India.

Outcomes: Provide Knowledge and understanding of Medieval India. Political, economic, and cultural field this paper will help to connect modern and contemporary history of India. Help for all competitive examinations and higher study and research.

Course Details

Chapter	Contents	

Unit-I	<p>1. Source of Medieval Indian History: Archaeological, Epigraphic and Numismatic sources, Chronicles; Literary sources – Persian, Sanskrit and Regional languages; Foreign Travelers' Accounts, Alberuni's Accounts on India</p> <p>2. Political Developments – The Delhi Sultanate – the Ghorids, the Turks, the Khaljis</p> <p>3. The Tughlaqs, the Sayyids and the Lodis and Decline of Delhi Sultanate</p>	1 Credit
Unit-II	<p>1. Theories of kingship, Nature of State – Theocratic , Central, Provincial and Local Administration</p> <p>2. Mahammad-bin-Tuglaq's and Balban's Administrative reforms,</p> <p>3. Razia Sultana: Rise and fall of lone female sultan</p>	1 Credit
Unit-III	<p>1. Agrarian Structure: Landlords and peasants, crops, Agricultural production; technology</p> <p>2. Iqta and the revenue-free grants, Slavery and Slave Trade, Khalji's Economic policy</p> <p>3. Sufi Movements in India : Its progress and impact on Indian politics, religion and society</p>	1 Credit
Unit-IV	<p>1. Urbanization: Process of urbanization, patterns urban settlements, towns and life</p> <p>2. Inter-regional trade, Maritime trade , ports and trade routes, trade and temples</p> <p>3. Industries – Cotton Textiles, Handicrafts, Factories & Technology</p>	1 Credit
Total	4units	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Recommended reading materials

R.C. Majumdar (ed)., : *The History and Culture of Indian People*,
Bharatiya VidyaBhaban, Bombay , Vols. V,VI,VII

The New Cambridge History of India Vol.1.3, Cambridge: Cambridge University Press, 1992.

Pollock, Sheldon, ed. : *Literary Cultures in History, Reconstructions from South Asia*.
Berkeley: University of California Press,2003.

Raychaudhuri, T and I. Habib, eds. : *Cambridge Economic History of India, Vol. I*.
Cambridge: Cambridge University Press,1982.

March Block: *Feudal Society, I, II*, Great Britain, 1975

Beach, M.C. : *Mughal and Rajput Paintings*.

M MPostan,: *Medieval Economy and Society*, Engalnd 1978

Athar Ali,: *Apratus of the Empire*, OUP, 1984

Hermann Kulke, ed., *The State in India (AD 1000 - AD 1700)*.

Details of Syllabus

Course No. HIST C104

Course Name: History of Modern India-I

Semester: I, Credits: 04

Core/Elective: CC

Objective and brief description on course and expectations: This course is structured to provide detail information of Europeans and their policies regarding revenue, trade commerce and administration in India. It will also give the idea about the different uprisings, movements, and revolutions against British Administration

Outcomes: Basic understanding about the modern Indian history. From colonial prospective to reformation and deindustrialization process to modernization, it will help to get information. This paper is important for all competitive examinations, civil service examinations, and research motivations.

Course Details

Chapter	Contents	
Unit-I	1. Emergence of Europeans in Indian – Portuguese and Dutch 2. Settlement of English, Danes and French in India 3. East Indian Company – French and English conflict	1 Credit

Unit-II	1. The Rise of the English Power in Bengal-Battle of Plassey 2. Battle of Buxar and its importance 3. British Expansion of North India – Conquest of Sind, Punjab, Awadh	1 Credit
Unit-III	1. The New Land revenue Settlements and its impacts 2. Permanent settlement, Ryotwary system, Mahalwari system 3. Economic impacts of British Rule in India	1 Credit
Unit-IV	1. Popular Uprisings in British India– peasant uprising of Rangpur and Dinajpur, Ahom's revolt, Khondh uprising, 2. Santhal Rebellion, Ramosi rising, Surat Salt agitation, Moplah uprising, Kuka movement 3. Revolt of 1857 – Nature, causes, consequences and opinions of Historians	1 Credit
Total	4units	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES:

1. **Bipan Chandra**, : *Communalism in Modern India*
2. **Bipan Chandra**, : *India's Struggle for Independence.*
3. **Eric Stokes**, : *The Peasant and the Raj.*
4. **J.C.Johari**,: *History of The Indian National Congress.*
5. **Jim Masselos**, : *Indian Nationalism-A History.*
6. **N.S.Bose**,: *Indian Awakening and Bengal.*
7. **S.Gopal**,: *British Policy in India, 1858-1905.*
8. **S.N. Sen**, : *Eighteen Fifty Seven.*
9. **S. Sen**, : *Peasant Movements in India.*
10. **R.C.Majumdar (ed)**,: *The History and Culture of Indian People*, Bharatiya Vidya Bhavan, Bombay , Vols. VIII, IX, X & XI

Details of Syllabus

Course No. HIST C105, Course Name: History of Odisha (From Early times to C.E.1568AD)

Semester: I, Credits: 04 Core/Elective: CC

Objective and brief description on course and expectations: This course is aims to provide an over view of the political history of Odisha from early period to downfall of Hindu dynasty.

Outcomes: Provide basic understanding on Odisha history from early time to the decline of Hindu dynasty. Students will get Motivation and inspiration by studying the achievements of Oriya and their contributions to the society. Help for all Odisha based competitive examinations.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. Sources of Odisha History-Ancient, Medieval and Modern. 2. Pre historic Culture of Odisha. 3. Historical geography - Kalinga, Odra, Kangoda Mandala, Tosali and Utkal. 	1 Credit
Unit-II	<ol style="list-style-type: none"> 1. The Mauryan Rule in Kalinga, Kalinga War andMaurya Administration in Kalinga. 2. Chedi Rule in Kalinga, Military and Cultural Achievements of Kharabela. 3. The Minor Ruling families-Matharas. 	1 Credit
Unit-III	<ol style="list-style-type: none"> 1. The Sailodbhavas of Kangodamandala 2. The Bhaumakaras of Tosali-Achievement of the Female Rulers 3. The Somavansi Rule ofKosala 	1 Credit

Unit-IV	<ol style="list-style-type: none"> 1. Imperial Gangas of Odisha-Military and Cultural achievements of Chodoganga Deva, AnangaBhimaDeva-III, and Narasingha Deva-I. 2. The Suryavansi Gajapatis - Military and Cultural achievements of Kapilendradeva, Purusottamdev and Prataprudradeva. 3. Downfall of Odishan Empire: Factors responsible for downfall. 	1 Credit
Total	4 Units,	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST & REFERENCES:

1. **H.K.Mahatab:** *History of Orissa*. 2 Vols., Cuttack, 1959
2. **K.C. Panigrahi,** : *History of Orissa*, Kitab Mahal, Cuttack
3. **A.C.Mittal:** *An Early History of Orissa*, Banaras Hindu University, 1962
4. **D.K.Ganguly,** : *Historical Geography and dynastic history of Orissa*,
5. **Dharma Narayana Das:** *Early History of Kalinga*, Calcutta, 1977
6. **N.K.Sahu,** : *Kharavela*.
7. **R.D.Banerjee,** : *History of Orissa*, Vol.I and Vol.II Calcutta, 1930-31.
8. **K.C.Mishra,** : *The Cult of Jagannatha*.
9. **M.N.Das,** : *Sidelights on History and Culture of Orissa*.
10. **N.K.Sahu,** : *Utkal University History of Orissa*.
11. **R.D.Banerjee,** : *History of Orissa*, 2 Vol.
12. **R.Subba Rao,** : *History of the Eastern Gangas*.

13. **A.C.Pradhan**,: A Study of History of Orissa.
14. **P.K.Mishra&J.K.Samal**,: Comprehensive History and Culture of Orissa, Vols-I & II ,parts, I & II Kaveri Books, New Delhi, 1997.
15. **S. C. Behera**,: Rise and fall of the Sailodbhavas, Calcutta, 1982.
16. **Biswarupa Das**,: Bhaumakaras ,the Buddhist kings of Orissa, Delhi, 1978.
17. **B.K.Sarma**,: The History of Somavamsi Rule in Orissa, Punthi Pustak, Calcutta, 1983.
18. **B.P.Panda**, :The History Of Early Gangas of Orissa, Giribala publication, Bhubaneswar
19. **B.P.Panda**: Odisha History, Giribala Publication, Bhubaneswar
20. **S.K. Panda**: Political and Cultural history of Orissa,
21. **P.Mukharjee**,: History of Gajapati kings of Orissa, Kitmahal, Cuttack, 1981

Semester-II

Course No. HIST C201

Course Name: Ancient Indian History-II

Credits: 04

Core/Elective: CC

Objective and brief description on course and expectations: Through this course students will be provided knowledge about the ancient India and its socio, political and cultural life of the people.

Outcomes: Knowledge and understanding on ancient Indian history. Development of literature, art, religion, architecture, social development, economic changes and political progress will be the main focused subjects for learning process. It will help for all competitive examinations and conservation of heritages.

Course Details

Chapter	Contents	
Unit-I	I. Sources of Maurya Empire and its foundation and Chandragupta Maurya: his achievements II. Ashok's Dhamma and Mauryan Administration III. Development of Art and architecture of Mauryan period And Down fall theories of Mauryan Dynasty	1 credit

Unit-II	I. Satavahanas – sources, politics, cultural development Rise II. Fall of Kushan Empire III. Progress of Art -Gandhara school of art and Mathura School of Art	1 credit
Unit-III	I. Sources of Gupta dynasty II. its political development III. Socio – economic and cultural development under Gupta Gupta Administration	1 credit
Unit-IV	I. Vakataka rulers and the achievements II. Harsavardhan and his time III. Socio and cultural condition of Northern Indian after Harsabardhan	1 credit
Total	4 Units,	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Recommended Reading Materials:

H.C.Raychoudhuri,: Political History of Ancient India, Calcutta, 1950

H.C.Ray,: Dynastic History of Northern India, 2 Vols. Calcutta, 1936

S.N.Sen, : Ancient Indian History and Civilization, New Delhi, 1999,

D.D.Kosambi,: An Introduction to study of Indian History, Bombay, 1956

Romila Thapar, : A History of India, Penguin, 1966

Romila Thapar, : Asoka and the Decline of the Maurya, Penguin, 1961

H.Kulke & D.Rothermund, : A History of India, Rupa & Co. Calcutta, 1991

A.C. Das, : Rigvedic India, Vol.I, 1921 Rhys Davis, : Buddhist India, London, 1911

J.W.Mc.Crindle,; The Invasion of India by Alexander the Great, 1896

D.R. Bhandarekar, : Asoka, 1932

V. Smith, : Asoka, OUP,1903

R.K.Mukharjee,: Chandragupta Maurya and hisTimes,MunshiramMonoharalal, New Delhi,1943

Details of Syllabus

Course No. HIST C202, **Course Name: Medieval Indian History (1526-1800)-II**

Credits: 04 **Core/Elective: CC**

Objective and brief description on course and expectations: This course is aimed to provide information on Medieval India and its political structure. Economic condition of the medieval India will be taught for a systematic understanding.

Outcomes: understanding on medieval history of India. rise of Mughals, Marathas, Vijayanagar, and regional powers and economic conditions will be the main subjects for students understanding and for their professional career. This paper can encourage for research and higher study. It will help for all competitive examinations Conducted in India.

Course Details

Chapter	Contents	
Unit-I	1. Source of Medieval Indian History:- Archaeological, Material evidences and Monuments; Chronicles; Literary sources – Persian, Sanskrit and Regional languages;DaftarKhannas: Firmans, Bahis / Pothis / Akhbarat;Foreign Travellers‘ Accounts – Persian and Arabic, English 2. Mughal Empire – Babur and the Sher ShahSuris, 3. Akbar, Aurangzeb, Expansion andConsolidation	1 credit
Unit-II	1. Later Mughals and Disintegration of the MughalEmpire. 2. Administration -Sher Shah’s Administrative Reforms, ;Mughal Administration – Central, Provincial and Local : 3. The Vijayanagara and the Administrative System in Vijayanagara	1 credit

Unit-III	<ol style="list-style-type: none"> 1. Bahmanis - Deccan Sultanate; Bijapur, Golkonda, Bidar, Berar and Ahmadnagar, 2. Rise of the Marathas & the foundation of Swaraj by Shivaji ;its expansion under the Peshwas ; Mughal – Maratha relations, Maratha Confederacy, Causes of Decline, Administrative System 3. Regional powers: Awadh, Punjab, Bengal, South Indian powers 	1 credit
Unit-IV	<ol style="list-style-type: none"> 1. Agricultural Production and Irrigation System, Village Economy, Peasantry, Urbanization and Demographic Structure. 2. Trade and Commerce – State Policies, Internal and External Trade: European Trade, Trade Centres and Ports, Transport and Communication: Hundi (Bills of Exchange) and Insurance, Currency, Mint System; Famines and Peasant Revolts. 3. Industries – Cotton Textiles, Handicrafts, Agro-Based industries, Organization, Factories & Technology 	1 credit
Total	4 units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Suggested Readings:

Alam, Muzaffar & Sanjay Subramanyam : *The Mughal State*, Oxford University Press, 2001.

Chandra, Satish : *History of Medieval India*, Orient Longman, 2007

Habib and Nigami : *The Delhi Sultanate*, Peoples Publishing House, 1992.

Habib, Irfan : *The Agrarian Systems of Mughal India*, Oxford University

Hubbi Bullah, A B M : *Foundation of Muslim Rule in India*, Allahabad, 1973

Jackson, Peter : *The Delhi Sultanate*, Oxford University Press, 2000.

Mooreland : *From Akbar to Aurangzeb*, New Delhi, (Reprint) 1992.

Moosvi, Shireen : *The Economy of Mughul India*, Oxford University Press, 1996.

Mukhia, Harbans :*Historians and Historiography of the Age of Akbar*,

Richards J. F. :*The Mughal Empire*, Cambridge University Press, 1993. Stein, Burton

:*Vijayanagara*, Cambridge University Press, 1989

Thapar, Romila :*Somanath: The Many Voices of History*, Penguin, 2004

Details of Syllabus

Course No. HIST C203

Course Name: History of Modern India-II

Credits: 04

Core/Elective: CC

Objective and brief description on course and expectations: This course is framed to give the ideas about the Indian political organizations and their role in the freedom struggle of India. This course would teach students the nature of Indian struggles and for its people. This course will give information on Indian freedom fighters and their sacrifice for India. The role of Gandhi in Indian freedom struggle would be highlighted and analyzed for a understanding about his contributions to it.

Outcomes: Knowledge and understanding about the colonial administration and freedom struggles of India. To understands the impact of colonialism on the society, economy and freedom of the people. Inspire the students by understanding the dedication, devotion of the freedom fighters for the country and her people. It will help for all competitive examinations conducted by UPSC, UGC, NDA, SSC, Army, Naval, Air force, State Public service commission, Private organizations etc. and higher study and research.

Course Details

Chapter	Contents	
Unit-I	1-Expansion policy of British-Permanent Settlement, Subsidiary Alliance System, Doctrine of Lapse 2- Indian Press-Press Act,1799, Indian Press Act-1835, Lytton and vernacular Press Act-1878, Indian Press Act-1931 3-Famine Policy under colonial Government-Famines from 1858-1947, Orissa Famine 1866, Famine of 1876-78, Strachey Commission 1880Famine of 1896-97, Bengal Famine of 1942-43	1 Credit
Unit-II	1-Lower Caste Movement in Modern India-Annadurai and DMK,	1 Credit

	Narayan Guru and SNDP, Jyotirao Phule and Satya Shodhak Samaj, Ambedkar's role in Dalit Movement 2- Growth of Left ideologies in India-Factors and Nature 3- Trade Union Movement in India-origin and nature	
Unit-III	1-Indian National Congress and Political Association before Indian National Congress 2-Moderate and Extremists phase of Indian National Congress 3- Partition of Bengal and Swadeshi Movement and Revolutionary activities in India, Ghadar Movement and Home - Rule Movement	1 Credit
Unit- IV	1. Mahatma Gandhi in Indian Politics and his ideology- Non-cooperation Movement, Civil Disobedient movement and Quit Indian Movement 2. Subash Chandra Bose and Indian National Army 3. Communalism, partition and freedom of India	1 Credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Recommended Reading Books:

A.K.Mishra,: The Raj, Nationalists & Reforms,ElitePublication.Bhubaneswar,2007

BipanChandra,: Modern India,

NCERTPublications

G.Venkatesan,: The History of Freedom Struggle in India,

Coimbatore,1985 H.Malik,: Muslim Nationalism in India andPakistan

K. Rajayyan, : History of Freedom Struggle in India, Madurai Publishing House, Madurai,1981

LalBahadur, : Indian Freedom Movement and Thought 1919-1929, Sterling Publishers, New Delhi,1983.

P.N.Chopra,: ASocial,EconomicandCulturalHistoryofIndiaVols:III

PattabhiSitaramaiya, : The Indian NationalMovement

R.C. Agarwal, :Constitutional development and National movement, S.Chand& Company, New Delhi,1974

R.C.Gupta, : IndianFreedomMovementandThought1930-1947,SterlingPublishers New Delhi,1983

R.C. Majumdar(ed.), : History and Culture of Indian People, BharatiyaVidyaB havan, vols.

Details of Syllabus

Course No. HIST C 204

Course Name: Modern World History

Credits: 04

Core/Elective: CC

Objective and brief description on course and expectations: This course is designed to provide knowledge about the world history. The important subjects and events of the world are highlighted through this course. International Organizations, peace organizations such as LON, UNO and political ideologies were developed during twentieth century are incorporated here to make students aware about their role in the world scenario.

Outcomes: Basic knowledge about the modern world and the problems faced by the 1st, 2nd and 3rd world countries during this period. Political, economic and military ideologies and their consequence is important to establish peace and harmony in the world. All competitive examinations have included these subjects. It will be benefited for the student's career.

Course Details

Chapter	Contents	
Unit-I	1. First World War- Causes and Consequences and Treaty of Versailles. 2. League of Nations: Objectives, Achievements and Failure. 3. Search of Security: Washington Conference, Locarno Pact, Kellog-Briand Pact	1 Credit

Unit-II	<ol style="list-style-type: none"> 1. Crisis in Capitalism: Depression and New Deal policy. 2. The Making of the Russian Revolution: Formation of Socialist State, Response and Reaction in the West. 3. Rise of Totalitarianism-Fascism in Italy and Nazism in Germany. 	1 Credit
Unit-III	<ol style="list-style-type: none"> 1. UNO-Objectives, Achievements and Failures 2. Role of UNO in the crisis of (a) Kashmir(b)Korea 3. UNO and Human Rights 	1 Credit
Unit-IV	<ol style="list-style-type: none"> 1. The Cold War-Super Power Rivalry(1945-1980) 2. Disarmament Conferences(1946-1972),(b)SALT-I, 1972, (c)SALT-II,1979, (d) START&START-II 3. NATO and Warsaw Pact:, structure, objectives, function and achievements 	1 Credit
Total	4units	4credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES:

C.D.Haun: *Modern Europe upto 1945.*

C.D.M. Ketelby, :*A History of Modern Times.*

Calvecoressi,P. :*World Politics since 1945.*

Carr.E.H.,:*International Relations between the Two World Wars,1919-1939,NewYork, 1966.*

F.Rice, :*The Foundations of Early Modern Europe.*

G.Doodspeed,:*The Nature and Function of International Organizations.*

Garden Green Wood, :*The Modern World–A History of Our Times.*

K.B.Keswani,:*International Relation in Modern World(1990-1995).*

Moon,P.T.,: *Imperialism and World Politics, TheMacmillanCompany,NewYork,1926.*

Morgenthau,Hans.J : *Politics among Nations :The struggle for Power and Peace*, New York,1973.

Nerman Lowe,:*Mastering Modern World History*.

PalmerandParkins,: *International Relations*,Calcutta,1970.

Q.Wrisht,:*The Study of International Relations*, Appleton–Centurycrafts,NewYork,1955.

S.P.Nanda,:*History of Modern World*,NewDelhi,1998.

Schleicher,C.P,: *International Relation*, NewDelhi,1963.

Schuman,F,: *International Politics*, 6thEd,McGraw Hill Book Company,NewYork,1958.

Sen.A.K, :*International Relationssince1919*,S.Chand&Co.,Ltd,NewDelhi,1993.

Details of Syllabus

Course No.HIST C205 **Course Name: History of Odisha (from C.E. 1569 to C.E.1948)**

Semester:II, Credits: 04 **Core/Elective: CC**

Objective and brief description on course and expectations:” This course is designed to give information on Odisha History since 1568 to contemporary period. Students will be taught about the socio, political and economic condition during Mughal, Maratha and British rule in Odisha Through this course it’s expected that students would get the information on movements, agitations, struggles for Odisha province as well as India.

Outcomes: Knowledge and understanding on medieval, colonial history and freedom struggles of Odisha. This paper will inspire the students to work for the society and welfare of the people. It will help for all competitive examinations related to Odisha.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. The Muslim Rule in Odisha: rise and impacts 2. The Maratha Rule in Odisha 3. British Rule in Odisha: establishment of power and administration 	1 Credit
Unit-II	<ol style="list-style-type: none"> 1. The Resistance Movement against the British rule–the Royal Resistance Movement, Paik Rebellion 2. The Kandh Rebellion of Ghumusar 	1 Credit

	3. Occupation of Sambalpur and Rebellion of Surendra Sai.	
Unit-III	<ol style="list-style-type: none"> 1. The Great famine of Odisha – 1866 Naa‘nk Durbhikha.: causes, impacts and famine commission 2. The Development of national Consciousness in Odisha and separate province 3. Formation of Odisha province and Contributions of Madhusudan Das and K.C.Gajapati. 	1 Credit
Unit- IV	<ol style="list-style-type: none"> 1. Language agitation in Odisha 2. Freedom Movement in Odisha- Non-Cooperation movement, civil-disobedience movement and Quit-India Movement. 3. Amalgamation of Princely states in Odisha 	1 Credit
Total	4units	4credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES

P.K.Mishra&J.K.Samal, :*Comprehensive History and Culture ofOrissa*,2Vols,4parts, Kaveri Books, New Delhi,1997.

P.Mukharjee,: *History ofOrissa*,Vol.VI,UtkalUniversity,1981

NibeditaMahanty,: *Orissa Nationalism*,1982

K.M.Patra,: *Orissa under the East India Company*,NewDelhi,1971

S.C.Patra,: *Formation of the provinces ofOrissa*,Calcutta,1979

R.Subramanyam,: *The SuryavansiGajapaties of Orissa*,AndhraUniversity,1957.

A.K.Pattanaik,: *Religious Policy of the ImperialGangas*,Discovery,Delhi,1989.

B.P. Panda, : *Orissa History*, GiribalaPublication,2005

H.K.Mahatab,: *History ofOrissa*,Vol.II,Cuttack,1959

B.C.Ray,: *Orissa under the Mughals*, Calcutta,1981

Details of Syllabus

Course No. HIST-VAC C206

Course Name: Indian Monuments

Semester: II, Credits: Non-Credit Course

Core/Elective: CC

Objective and brief description on course and expectations: Students will get information on Monuments constructed by various rulers in different times. Style of work, sculpture, architecture and engineering adopted to build up the work will be discussed and disseminate among the students. This will be benefited for future generation to revive old knowledge in building the future and also provided platform for growth of tourism.

Course Details

Chapter	Content	Credit
Unit-I	I. Monuments of the Mauryas and Guptas II. Monuments of the Pallavas , the Chalukyas and the Cholas	
Unit-II	I. Monuments of the Sultan Periods II. Monuments of the Mughal period	
Unit-III	I. Jaina Monuments and Buddhist Monuments of Odisha II. Temples of the Somavamsis and the Gangas of Odisha	
Unit-IV	I. Monuments of Medieval Odisha(Temples and Palaces) II. Monuments of South Odisha(Temples, Maths and Palaces)	

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Books:

1. Percy Brown, Indian Architecture, Vol.I , II & III
2. James Fergusson, *History of Indian and Eastern Architecture*
3. S.K. Saraswati, *A Survey of Indian Sculpture*
4. N.S. Ramaswami, *Indian Monuments*
5. N.R.Roy, *Mouryan Art*
6. Satish Grover, *The Architecture of India*
7. E.B.Havell, *Indian Architecture*
8. E.T.Richmovel, *Moslim Architecture*
9. Charles Fabri, *History of the Art of Orissa*
10. K.C. Panigrahi, *Archeological Remains of Bhubaneswar*
11. R.P.Mohapatra, *Jaina Monuments in Orissa*
12. K.V. Sundarjan, *Kalinga Temple Architecture*
13. Devala Mitra, *Konarka*
14. R.H.Mitra, *Antiquities of Orissa*

SEMESTER-III

Details of Syllabus

Course No. HIST CT 300

Course Name: Cultural History of India

Semester: III, Credits: 04

Core/Elective: CBCT

Objective and brief description on course and expectations: This course is designed to provide knowledge of Indian culture, art, music, dance, architecture, literature, etc. students will learn the cultural diversity and its importance in India

Outcomes: understanding on Indian culture and diversity and its importance for life and sustainability. Art-Architecture and literature is the reflection of the society helps for the documentations for future generation. Inspire students to adopt these talents. It will help for all competitive examinations.

Course Details

Chapter	Contents	
Unit-I	1. Culture: meaning, definition and debates 2. Understanding Indian Culture: Unity and Diversity 3. Evolution of Indian Culture: Pre History to Modern period	1 Credit
Unit-II	1. Vedic literary culture and Philosophy of humanism and brotherhood 2. The Mahabharata and the Ramayana: Philosophy, Society and Politics 3. Science and Technological Culture: Vedic Age and Ancient Period	1 credit
Unit-III	1. History of Indian Music : classical music, folk music and modern music 2. History of Indian Dance – classical dance, folk dance 3. Indian theater: classical Sanskrit theater, folk theater, modern Indian theater	1 credit

Unit-IV	1. History of Indian Cinema : development and progress, Indian Cinematograph Act of 1952 2. Secular festivals of Indian and Festivals of North East India 3. UNESCO list of Tangible and Intangible heritage sites of India	1 credit
Total	4units	4credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES

A.L. Basham(ed), : Cultural History of India, OUP, New Delhi, 2011.

Allchin.B.R., : The Birth of Indian Civilization, 1968

Auboyer . J., : Daily Life in Ancient India, 1965 Cultural Heritage of India,

Bharatiya Vidyabhaban Series, Vol-1-IV.

J.Dora, : Sakta Monuments of Orissa, A Study of Art, Architecture and iconography,

Bharatiya Kala Prakasan, New Delhi, 2010.

Meenakshi Kanna, : Cultural History of Medieval India, Social Science Press, 200

Romila Thapar, : Ancient Indian Social History, Orient Longman Pvt., Ltd., 2010

Romila Thapar, : The Cultural Past. The History and Culture of the Indian People vol. I

II, Bharatiya Vidya Bharan Series, Mumbai.

Thilip M. Menon, : Cultural History of Modern India, 2012

Zacharias, : Renaissant India.

A.L. Basham, : The Wonder that was India, Rup and Co. Calcutta, 1971

R.C. Majumdar (ed), : The History and Culture of Indian People, Bharatiya Vidyabhaban,

Bombay

Details of Syllabus

Course No. HIST C 301, Course Name: History of Science and Technology in India

Semester: III, Credits:04 Core/Elective: CC

Objective and brief description on course and expectations: This course is primarily focused on the development of science and technology since the beginning of human civilization in India. Origin and growth of sciences and technologies during prehistoric era to contemporary periods are targeted to analyze and provide information on these subjects. It gives the ideas about the Indian science and Technological revolutions during Harrapan period, Vedic era and later stages. Students will know about the features and nature of ancient, medieval and modern technologies of India.

Outcomes:to understand the scientific development and its importance in the progress of human life and society through this subject. It will help for the critical study and logical understanding of all aspects. Preparing all type of competitive examinations.

Course Details

Chapter	Contents	
Unit-I	1. Origin and development of science and technology in pre-historic period and Beginning of tool making and Agricultural development 2. Science and Technology during Harappa and Vedic times 3. Science in Ancient India – Doctrine of five elements, Theory of Atomism, and Silpasastra	1 Credit
Unit-II	1. Developments in Astronomy and Mathematics: Contribution of Aryabhata, Varahamihira and Bhaskara–I 2. Development of Textile Technology - in ancient and medieval period 3. Developments of Medicine and Surgery: Ayurveda– Charaka and Sushruta <i>Samhitas</i>	1 Credit

Unit-III	<ol style="list-style-type: none"> 1. Early European Scientists in Colonial India–Surveyors; Botanists, Doctors under the Company’s service 2. Development of Mining and Metallurgy 3. Pioneer Indian Scientists and their contributions–J.C. Bose, C.V.Raman 	1 Credit
Unit-IV	<ol style="list-style-type: none"> 1. Atomic Energy in India: origin, progress, achievements 2. Space science in India: History and progress 3. Defense Research in India: History and development 	1 Credit
Total	4Units,	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES

Arnold Devid.: Science, Technology and Medicine in Colonial India, The New Cambridge History of India Series, OUP, Cambridge, 1999.

A.K.Bag (ed.): History of Technology in India, Vol.I, INSA, New Delhi, 1997.

A.K.Biswas, : Science in India, Firma K L Mukhopadhyaya; Calcutta, 1967.

Ahsan Jan Qaisar,: The Indian Response to European Technology and Culture (A.D.1498-1707); Oxford University Press, Delhi, 1982.

Ardendu Sekhar Ray, Crafts and Technology in Ancient India; S.S.Publishers, Delhi, 1998.

B.R .Nanda (ed.), Science and Technology in India, Vikas Publishing House Pvt.Ltd., New Delhi, 1977.

Debiprasad Chattopadhyaya, History of Science and Technology in Ancient India, 3, Vols. Firma K L M Pvt.Ltd., Calcutta, Vol.I(1986), Vol.II(1991), Vol.III(1996).

D.M. Bose et.al (ed.), A Concise History of Science in India: INSA, New Delhi, 1971.

Anil Kumar, Medicine and the Raj, Sage, Delhi, 1998.

Deepak Kumar, Disease and Medicine in India: A Historical Overview.

Macleod, Ray and Deepak Kumar(eds.), Technology and The Raj, Sage, Delhi, 1995.

Deepak Kumar, Science and The Raj, Oxford University Press, Delhi, 1995.

Dharmpal, Indian Science and Technology in the Eighteenth Century -

Some Contemporary European Account, Impex India, Delhi, 1971.

Deepak Kumar(ed.), Science and Empire: Essays in Indian Context, Anamika Prakashan, Delhi, 1991.

H.C.Bhardwaj, Aspects of Ancient Indian Technology, Motilal Banarasi

Dass, Delhi, 1979. Kenneth G. Zysk, Asceticism and Healing in Ancient India, Oxford

University Press, Delhi, 1991.

Details of Syllabus

Course No. HIST C302,

Course Name: Historiography

Credits: 04

Core/Elective: CC

Objective and brief description on course and expectations: Historiography is a foundation course of history subject. This subject will provide a basic knowledge of history writings and historical methods. Different ideas and styles of writing about past history is primarily describes. Historians and their writings are the central theme of this subject. Students will get idea about both World and Indian historians and scholars who have written valuable historical records. The course is designed to train candidates to accurately assess the past, trend, rationally predict future development and understanding of the real historical facts

Outcomes: To understand the historical methods of writing, and research in history. Prepare and help competitive examinations i.e. NET, UPSC, OPSC, SSB, DCO, DTO etc.

Course Details

Chapter	Contents	
Unit-I	1. Ancient Historiography – Herodotus, Thucydides & Confucius 2. Medieval Historiography: St Augustine & Ibn Khaldoun, 3. Modern Historiography: Ranke, RG Collingwood, & March Bloch	I Credit
Unit-II	1. Historicity of Purana, Vamsa, & Charita 2. Kalhana–Rajatarangini 3. Medieval Indian Historiography: Amir Khusrau, Barani, & Badauni and regional writings	I Credit

Unit-III	<ol style="list-style-type: none"> 1. Colonial Historiography on India –J. Mill, V. Smith. & WW Hunter 2. Nationalist historiography: RG Bhandarkar, KP Jaiswal, SK Aiyangar & Jadunath Sarkar 3. Modern Indian Historians: Mahhammad Habib, KA Nilakantha Sastri & R C Majumdar 	I Credit
Unit-IV	<ol style="list-style-type: none"> 1. Marxist &– DD Kosambi, RS Sharma, Romila Thapar 2. Subaltern Historiography: Ramachandra Guha, & Dipesh Chakrabarty, Gayatri Spivak 3. History of Odisha: Historiographical study 	I Credit
Total	4Units	4 Credits

- Include practical's/dissertations/field work/seminar wherever necessary

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Textbooks and reading materials:

1. E.Shreedharan, *A Textbook of Historiography*, OrientLongman.
2. K. Rajayyan, *History: it's Theory &Method*
3. B.SheikAli,*History:ItsTheory&Methods*.
4. E. H. Carr, *What isHistory?*
5. G. T. Reiner, *History Its purpose and Method*.
6. J. B .Bury, *The Ancient Greek History & Progress inHistory*
7. K. A .NilakantaSatri, *Historical Method in Relation to IndianHistory*,Madras,1956
8. Marc Bloch:*The Historians Craft*,Manchester,1954
9. N. Subramanian,*Historiography*
10. R.G. Collingwood, *The Idea of History*
11. S. Manickam, *History and HistoricalMethods*.
12. Webster, *An Introduction toHistoryandMethod*.

13. H.E .Barnes:*A History of Historical Writing*,NewYork,1972
14. M.Hasan(ed.):*HistoriansofMedievalIndia*,Meerut,1968
15. S.P.Sen(ed.):*Historians and Historiography inModern India*,Calcutta,1973
16. C.H. Philips (ed.):*Historians of India,PakistanandCeylon*,London,1961
17. B.N.Luniya:*SomeHistoriansofMedievalIndia*,Agra,1969
18. Tej Ram Sharma :*Historiography: A History of History Writing*, New Delhi ,2005

Details of Syllabus

Course No.HIST E303 Course Name: Socio-Cultural History of Ancient India

Semester: III, Credits: 04 Core/Elective: CE

Objective and brief description on course and expectations: This course is designed to provide the knowledge on socio-cultural history of ancient India.

Outcomes: Knowledge and understanding on socio cultural aspects of ancient history of Odisha. Provide adequate information on art architecture, and progress and development of its cultural heritage. It will help for all competitive examinations related to Odisha as well as India.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. Harappan society and culture 2. Vedic society, religion and cultural life of the people 3. Emergence of varna and social stratification 	1 Credit
Unit-II	<ol style="list-style-type: none"> 1. Religious Movement in India in sixth Century B.C–Reaction against Vedic Brahmanism 2. Vardhaman Mahavira–Life, spread of Jainism-principle of Jainism 3. Gautama Buddha’s life and Buddhism-spread of Buddhism and principle of Buddhism. 	1 credit
Unit-III	<ol style="list-style-type: none"> 1. Society and culture of Maurya period 2. Socio cultural history of post Mauryan period 3. Social system in south India reflects in Sangam literature 	1 credit

Unit-IV	1. Social development during Gupta period: professions, occupations and caste system 2. Literary development during Gupta period 3. Development of science, technologies and medicine during Gupta period	1 credit
Total	4units	4credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES:

R.C.Majumdar(Ed), : (I)History of Culture of Indian People, Bharatiya VidyaBhaban,

H.C.Raychoudhuri, : Political History of Ancient India, Calcutta, 1950

H.C.Ray,: Dynastic History of Northern India, 2Vols. Calcutta, 1936

S.N.Sen,: Ancient Indian History and Civilization, New Delhi, 1999,

D.D.Kosambi,: An Introduction to study of Indian History, Bombay, 1956

Romila Thapar,: A History of India, Penguin, 1966

Romila Thapar,: Asoka and the Decline of the maurya, Penguin, 1961

H.Kulke and D.Rothermud,: A History of India, Rupa & Co. Calcutta, 1991

A.C. Das, : Rig Vedic India, Vol.I, 1921

Rhys Davis, : Buddhist India, London, 1911

J.W.Mc.Crindle,: The Invasion of India by Alexander the Great, 1896

D.R. Bhandarekar, Asoka, 1932

V. Smith, Asoka, OUP, 1903

R. K. Mukharjee,: Chandragupta Maurya and his Times, Munshiram Monohar Lal, New Delhi, 1943

Details of Syllabus

Course No. HIST E303 Course Name: Studies of Early Medieval India (750-1206 A.D)

Semester:III, Credits: 04 Core/Elective: CE

Objective and brief description on course and expectations: This paper will provide the information on various sources to study early medieval India. Political structure and socio-cultural and religious life of the people of the period will be analyzed and taught to the students.

Outcomes: understanding on the early medieval society, culture, politics of India. The process of transition from ancient to medieval India is important subject for students to understand the concept of transition. It will help students in all competitive examinations.

Course Details

Chapter	Contents	
Unit-I	1. Historical Sources: texts, epigraphic and numismatic data 2. Debates on Indian feudalism 3. Evolution of political structures: Rashtrakutas, Palas, and Cholas	1 credit
Unit- II	1. Arab conquest of Sindh: nature and impact 2. Causes and consequences of early Turkish invasions: Mahmud of Ghazni; Shahab-ud-Din of Ghur 3. Nature and function of Rajput kingdoms of Early medieval India	1 credit
Unit- III	1. Growth of Brahminical religions: Vaisnavism and Saivism; Temples, Patronage 2. Popular religious cults: Bhakti, Tantrism, Puranic traditions 3. Tamil Bhakti movement - Shankara, Madhava and Ramanujacharya	1 credit
Unit- IV	1. Education and Educational Institutions: Agraharas, Mathas and Mahaviharas as Centres of Education 2. Development of Regional languages and literature 3. Art and architecture: Evolution of regional styles of art and architecture	1 credit

Total	4units	4credits
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Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

References for reading-

- R.S. Sharma, : Indian Feudalism (circa 300 - 1200).
- B.D. Chattopadhyaya, : The Making of Early Medieval India.
- R.S. Sharma and K.M. Shrimali, eds, : Comprehensive History of India, Vol. IV (A & B).
- Mohammad Habib and K.A. Nizami, eds, : Comprehensive History of India, Vol. V,
- The Delhi Sultanate Hermann Kulke, ed., : The State in India (AD 1000 - AD 1700). 11
- N. Karashima, : South Indian History and Society (Studies from Inscriptions, AD 850 -1800
- Derryl N. Maclean, : Religion and Society in Arab Sindh. IrfanHabib, Medieval India: The Study of a Civilization.
- Richard Davis : Lives of Indian Images.
- RomilaThapar, :Somanatha: The Many Voices of a History.
- John S. Deyell, : Living Without Silver: The Monetary History of Early Medieval North India.
- VijayaRamaswamy, : Walking Naked: Women, Society, and Spirituality in South India.
- Burton Stein, : Peasant State and Society in Medieval South India.
- R. Champakalakshmi, : Trade, Ideology and Urbanization: South India, 300 BC to 1300 AD.
- Al. Beruni's: India, NBT edition.
- S C Mishra, : Rise of Muslim Communities in Gujarat.
- J. Schwartzberg, : Historical Atlas of South Asia.

Details of Syllabus

Course No. HIST E303, Course Name: Constitution and Administrative Development in India

Semester:III, Credits: 04

Core/Elective: CE

Objective and brief description on course and expectations: This paper will provide knowledge about the history and evaluation of Indian constitution. Particularly this course will discuss about the different acts and regulations during British administration in India.

Outcomes: Knowledge and understanding on Indian constitutions. This paper will provide

idea on the Process of making Indian constitution from colonial era to Independent India. Create awareness about the value and importance of the Constitution for progress of the Individuals as well as country. It will help for all competitive examinations have been conducted by government and non-government organizations.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. Regulating Act,1773 & Pitt's India Act of1784 2. The Charter Act of 1833 & The Charter Act of1853 3. Government of IndiaAct,1858. 	1 credit
Unit-II	<ol style="list-style-type: none"> 1. IndianCouncil'sAct,1861 & IndianCouncil'sAct1892 2. Indian Council's Act, 1909. 3. Government of IndiaAct,1919 	1 credit
Unit-III	<ol style="list-style-type: none"> 1. Simon Commission, Nehru Report, Round Table Conference & Whitepaper 2. Govt. of India Act,1935. 3. Indian IndependenceAct,1947 	1 credit
Unit-IV	<ol style="list-style-type: none"> 1. Growth of Central Legislature in India. 2. Growth of Provincial Legislature in India. 3. Salient Features of Indian Constitution 	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES:

A.C.Banerjee,:*The Constitutional History of India (Vol-1)1600-1858.*

A.C.Banerjee,:*The Constitutional History of India.(Vol-II)1858-1919.*

B.B.Mishra,:*The Administrative History of India (1834-1946).*

B.B.Mishra,: *The Judicial Administration of the East India Company in Bengal.*

G.N.Singh, : *Indian Constitutional and National Development.*

H.Tinkar, : *The Foundation of Local Self-Government in India, Pakistan and Burma.*

J.K.Mittal,: *Constituent Assembly of India.*

M.V.Pylee,: *Constitutional History of Modern India.*

S.R.Bakshi, : *British Administrative Policy in India.*

SanjayJoshi,: *The Middle Class in Colonial India.*

ShivKumarChoube,: *Constituent Assembly of India.*

VishnooBhagaban,: *Indian Freedom Movement and Constitutional Acts*

Details of Syllabus

Course No. HIST E304

Course Name: Socio-Cultural History of Early Odisha

Semester: III, Credits: 04

Core/Elective: CE

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. Pre-historic Culture of Odisha: Palaeolithic, Mesolithic & Neolithic 2. Odisha on the Early Accounts 3. Early Urban centres of Odisha 	1 credit
Unit-II	<ol style="list-style-type: none"> 1. The Social History of Odisha from 3rd Century B.C. to 4th Century A.D. 2. Social history of Odisha – Sailodbhavas from 5th Century B.C. to 10th Century A.D. 3. Social history of Odisha from 10th Century A.D. to 16th Century A.D. 	1 credit

Unit-III	1. Art & Architecture in Early Odisha 2. Religious traditions in Early Odisha 3. Epigraphical history of Odisha: Inscriptions & its evolution	1 credit
Unit-IV	1. Economic conditions of Odisha from Asoka to Ganga period 2. Agriculture, Cattle, Trade & Commerce in Early Odisha 3. Occupations, Industries, House building and means of transport in Early Odisha	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST & REFERENCES:

1. **H.K.Mahatab:** *History of Orissa*. 2 Vols., Cuttack, 1959
2. **K.C. Panigrahi,** : *History of Orissa*, Kitab Mahal, Cuttack
3. **A.C.Mittal:** *An Early History of Orissa*, Banaras Hindu University, 1962
4. **D.K.Ganguly,** : *Historical Geography and dynastic history of Orissa*,
5. **Dharma Narayana Das:** *Early History of Kalinga*, Calcutta, 1977
6. **N.K.Sahu,** : *Kharavela*.
7. **R.D.Banerjee,** : *History of Orissa*, Vol.I and Vol.II Calcutta, 1930-31.
8. **K.C.Mishra,** : *The Cult of Jagannatha*.
9. **M.N.Das,** : *Sidelights on History and Culture of Orissa*.
10. **N.K.Sahu,** : *Utkal University History of Orissa*.

11. **R.D.Banarjee**,: History of Orissa,2Vol.
12. **R.SubbaRao**,: History of the Eastern Gangas.
13. **A.C.Pradhan**,: A Study of History of Orissa.
14. **P.K.Mishra&J.K.Samal**,: Comprehensive Historyand Culture of Orissa,Vols-I & II ,parts, I& II Kaveri Books, NewDelhi,1997.
15. **S. C. Behera**,: Rise and fall of theSailodbhavas,Calcutta,1982.
16. **BiswarupaDas**,:Bhaumakaras ,the Buddhistkings of Orissa,Delhi,1978.
17. **B.K.Sarma**,: The History of SomavamsiRulein Orissa, PunthiPustak,Calcutta,1983.
18. **B.P.Panda** ,:TheHistoryOf EarlyGangas ofOrissa,Giribalpublication, Bhubaneswar
19. **B.P.Panda**: OdishaHistory,Giribala Publication,Bhubaneswar
20. **S.K. Panda**: Political and Cultural historyof Orissa,
21. **P.Mukharjee**,:HistoryofGajapatikings ofOrissa,Kitbmahal,Cuttack,1981

Details of Syllabus

Course No. HIST E304 Course Name: Medieval History of Odisha: society and culture

Semester: III, Credits: 04 Core/Elective: CE

Course Details

Chapter	Contents	
Unit-I	1. Society: social life, socio religious traditions, caste system, Education system, women, and tribal society 2. Religion: Shaivism, Vaisnavism and Shaktism in Odisha 3. Jsgannath Cult: Evolution and Evaluation	1 credit

Unit-II	<ol style="list-style-type: none"> 1. Literary accounts on Odisha: Travelers account, Persian accounts, administrative and literary accounts on medieval Odisha 2. Literature: evolution of Odia Language, Sarala Das, Panchasakha 3. Development of Odia literature from of 16th and 18th centuries: Kavya, prose and choutisa 	1 credit
Unit-III	<ol style="list-style-type: none"> 1. Temple architecture: evolutions, types, technology 2. Temple: Konark temple, Lingaraj temple, Jaggannath temple, Rajarani temple, Brahmeswar temple, temples of Bhubaneswar and Sakta temples 3. Art and Paintings: Temple paintings, Matha Painting , Plam leaf Paintings and Patta paintings 	1 credit
Unit-IV	<ol style="list-style-type: none"> 1. Women rulers: Bhoumakara period, Bhoi dynasty, Bhanja dynesties, Jeypore dynasty 2. Impact of Muslim and Maratha administration on society and culture of Odisha 3. Agriculture and Industry: agricultural productions and technology and Industrial centers and Ports 	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES

P.K.Mishra&J.K.Samal, :*Comprehensive History and Culture ofOrissa*,2Vols,4parts, Kaveri Books, New Delhi,1997.

P.Mukharjee, : *History ofOrissa*,Vol.VI,UtkalUniversity,1981

Nibedita Mahanty,: *Orissa Nationalism*, 1982

K.M. Patra,: *Orissa under the East India Company*, New Delhi, 1971

S.C. Patra,: *Formation of the provinces of Orissa*, Calcutta, 1979

R. Subramanyam,: *The Suryavansi Gajapaties of Orissa*, Andhra University, 1957.

A.K. Pattanaik,: *Religious Policy of the Imperial Gangas*, Discovery, Delhi, 1989.

B.P. Panda, : *Orissa History*, Giribala Publication, 2005

H.K. Mahatab,: *History of Orissa*, Vol.II, Cuttack, 1959

B.C. Ray,: *Orissa under the Mughals*, Calcutta, 1981

Details of Syllabus

Course No. HIST E304

Course Name: History of Progressive Modern Odisha

Semester: III, Credits: 04

Core/Elective: CE

Course Details

Chapter	Contents	
Unit-I	1-Formation of Modern Odisha 2-Growth of Modern Education in Odisha 3-Developmmt of Press and Mass Media in Odisha	1 credit
Unit-II	1-Development of Communication System in Odisha- Road, Railway and Airways 2-Growth and Development of Industries in Odisha 3- Development of Modern Odia Literature: Radhanath Roy, Fakir Mohan Senapathi & Gangadhar Meher	1 credit
Unit-III	1. Dams in Odisha: Its implication & Effects – Hirakud Dam, Rengali Dam, Mandira Dam & Sapua Dam 2. Trabal Religion Faith in Odisha: Stambheswari Cult & Mahima Cult 3. Evangelization: Its Origin & Progress	1 credit

Unit-IV	1. Cottage Industries in Odisha : Silk Weaving, Cotton Weaving, 2. Silver Work, Horn Work & Leather Work 3. Social Movements in Odisha & Trade Union Movement in Odisha	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES

1. **P.K.Mishra&J.K.Samal**, :*Comprehensive History and Culture ofOrissa*,2Vols,4parts, Kaveri Books, New Delhi,1997.
2. **P.Mukharjee**,: *History ofOrissa*,Vol.VI,UtkalUniversity,1981
3. **NibeditaMahanty**,: *Orissa Nationalism*,1982
4. **K.M.Patra**,: *Orissa under the East India Company*,NewDelhi,1971
5. **S.C.Patra**,: *Formation of the provinces ofOrissa*,Calcutta,1979
6. **R.Subramanyam**,: *The SuryavansiGajapaties of Orissa*,AndhraUniversity,1957.
7. **A.K.Pattanaik**,: *Religious Policy of the ImperialGangas*,Discovery,Delhi,1989.
8. **B.P. Panda**, : *Orissa History*, GiribalaPublication,2005
9. **H.K.Mahatab**,: *History ofOrissa*,Vol.II,Cuttack,1959
10. **B.C.Ray**,: *Orissa under the Mughals*, Calcutta,1981
11. **SUBASH CHANDRA PADHY & SASMITA MOHAPATRA**, *SOCIAL MOVEMENT IN ODISHA, 2008*
12. **MUKTI KANTA MOHANTY**, *TRADE UNION MOVEMENT IN ODISHA,2002*

Details of Syllabus

Course No. HIST-VAC C305, Course Name: General Studies for Civil Services & Competitive Examinations

Semester: III, Credits: Non-Credit Course Core/Elective: CC

Course Details

Chapter	Contents	
Unit-I	<p align="center">CURRENT AFFAIRS:</p> <ol style="list-style-type: none"> 1. National symbols - Profile of India - - Latest inventions on science & technology - Eminent personalities & places in news - Sports & games - Books & authors - Awards & honours – 2. Cultural panorama - Policy on environment and ecology - India and its neighbours - Latest terminology - Appointments - who is who? - Latest court verdicts - public opinion - Political parties and political system in India - Public awareness & general administration – 3. Role of voluntary organizations & govt. - Welfare oriented govt. schemes, their utility – Flagship Programmes of Central Government - Mass media & communication. 	
Unit-II	<p align="center">GEOGRAPHY & INDIAN ECONOMY</p> <ol style="list-style-type: none"> 1. Indian Geography: Basics of India- Physical features-River systems-Climate-Human Geography. 2. World Geography: Geomorphology- Oceanography- Biogeography. 3. Nature of Indian economy- Five year plan models an assessment- Land reforms & agriculture- Application of science in agriculture- Industrial growth -Capital formation and investment- Role of public sector- different sources and development -Finance Commission, Nithi Ayog, National Development Council, - National income Public finance & fiscal policy Price policy & public distribution Banking, money & monetary policy Role of Foreign Direct Investment (FDI) 	

Unit-III	<p style="text-align: center;">CONSTITUTION OF INDIA</p> <ol style="list-style-type: none"> 1. Salient features of Indian constitution Union, State and territory Citizenship Fundamental rights Fundamental duties Union Executive- Union legislature State executive and Legislature – Status of Jammu & Kashmir Local government – Judiciary in India – 2. Indian federalism – centre – state relations Law-Making Procedure -Emergency provisions Civil services in India Administrative challenges in a welfare state Complexities of district administration Elections Amendments to constitution Anticorruption measures – 3. Central and State Commission, Empowerment of women Voluntary organizations and public grievances redressal, Human rights charter –Consumer. 	
Unit-IV	<p style="text-align: center;">INDIA AND WORLD AFFAIRS</p> <ol style="list-style-type: none"> 1. Indian foreign policy- Foreign Affairs with special emphasis on India’s relations with neighbouring countries and in the region Defence, national security system and terrorism 2. World And Regional organizations and Pacts and Summits - Security and defense related matters Nuclear policy, issues and conflicts International law 3. Indian Diaspora and its contribution to India and the World – India and super powers 	

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

REFERENCES:

Chandra, Bipin. Modern India. 2017. Penqueen Publication, New Delhi. Dutt and Sundaram. 2016.

Indian Economy. S.Chand and Company New, Delhi.

Fadia B.L. 2017. Indian Government and Politics. Sahitya Bhawan , NewDelhi.

Fadia B.L. 2017. International Relations, Sahitya Bhawan , New Delhi.

India Year Book 2023/2024 , Publication Division, New Delhi.

SEMESTER-IV

Details of Syllabus

Course No.HIST C401

Course Name: Research Methodology

Semester:IV, **Credits:** 04

Core/Elective: CC

Objective and brief description on course and expectations: This course aims to enlighten the students on research related to the history subjects. Research tools, methods, approaches, and writings of history are the main features of this course. Students would learn the historical facts and evidences and bias which are very important part of this course teaching. Course also targets to analyze the scientific methods to study and understand history.

Outcomes: This paper will provide a clear idea about the concept of history, historical writings, methods, research process, and ways to understand history for better understand of present. Help for all competitive examinations related to history.

Course Details

Chapter	Contents	
Unit-I	1. Meaning, Definitions and nature of Research, 2. Objectives, Motivations & General Characteristics of Research 3. Criteria of Good Research & Types of Research	1 Credit
Unit-II	1. Scientific thinking in Research, Research Problem & Selecting the Problems 2. Sources of the Problems, Defining a Problem & Evaluation of a Problem 3. Review of Literature	1 Credit
Unit-III	1. Research Hypothesis, Meaning and Importance of Hypothesis 2. Methods of data collection, analysis of data, Interpretation, & Plagiarism and ethics 3. Bibliography, References style and Dissertation/Project writings	1 Credit

Unit-IV	1. What is History? Objectives, definitions and scope of History 2. Objectivity, Bias and Value Judgment in History and Historical writings 3. Process of Historical Research- types, features, methods	1 Credit
Total	4 units	4 Credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOKS RECOMMENDED:

1. **Shaikh Ali, B.** :2014, History-Its Theory and Methods, New Delhi, Laxmi Publication
2. **Baja, S.** : 2002, Research Methodology in History, New Delhi, Anmol Publication
3. **Kothari, C.R.:** , 2004, Research Methodology in Social Sciences, NewDelhi,
4. **Kumar,R.:** 2011, Research Methodology: A Step-by- step guide for beginners, London
5. **Singh,Y.K.,** : 2006, Fundamental of Research Methodology and Statistics, NewDelhi
6. **Majumdar, K.:** , 2011, Research Methodology in History, NewDelhi

Details of Syllabus

Course No. HIST C402

Course Name: Women's History of India

Semester: IV, Credits: 04

Core/Elective: CC

Objective and brief description on course and expectations: This course is designed to provide information on Indian women's role and contributions to the society. It's highlighted their position, status in the Indian society, politics and culture. Course is also given priority to analyze the various factors which were responsible for their decline in the society and politics. This course would make students enlighten about the negligence of history and historians towards women's history and their contributions to the development of society. The process of marginalization of women through religion, tradition, and gender would be analyzed to make students aware about the facts and evidences of women's marginalization in the past. Expectation is students should feel equal in the name of gender, tradition and religion.

Outcomes: Creates awareness about the women's contributions and their role in the progress and development of the society. Information about their status and positions in ancient India to help students to understand the process of women marginalization. To understand the importance of gender equality for the society and its developments. This paper will help to reform the society and establish an egalitarian philosophy for a healthy and prosperous life through the students. Motivate students to do research and prepare for competitive examinations.

Course Details

Chapter	Contents	
UNIT-I	<ol style="list-style-type: none"> 1. Invisible women in visible history: why women's history? Origin and development of women's history writing in India 2. Rig-Vedic period and the status and position of Indian women, the decline of women's position in Later Vedic period onwards: causes and factors 3. Ancient Laws books and religious scriptures of India and the Marginalization of women. 	1 Credit
UNIT-II	<ol style="list-style-type: none"> 1. Position of Women during medieval India: Study through the Puberty rituals, Devadasi system, Purdah, child marriage, prostitution, widowhood, polygamy, infanticide, property rights, , Zanana System, patriarchal traditions and laws 2. Women in Politics during medieval India 3. Women's contributions as writers, saints, great mothers, musician, dancer, and other professional works to the medieval India 4. 	1 Credit
UNIT-III	<ol style="list-style-type: none"> 1. Women questions: women issues and reform movements during colonial India 2. Gandhi and Ambedkar and Indian women's issue: rights and equality, social reformations, and national movements 3. Development of women Organizations during pre-independence and post-independence era: Bharat Mahila Parishada, Womens Indian Association, All India women's Conference, Kerala Fisher work movement, Chipko movements, Anti wine movements 	1 Credit

UNIt-IV	1. Ancient Orissa and women: Analyzing women's status through the lens of sculpture and religious traditions 2. Women's role in politics and administration during early and medieval period: Boumakara rulers, Princess Annapurna devi(JaganMohini), Queen of Banki - Sukamahadevi and Queen of Mayurbhanja-SumitraDevi 3. Making of Orissa and forgotten women: – KuntalaKumariSabat, KiranbalaSen, Sita Devi Khadnga, Hiramani Devi, SorojiniChoudhuri, Kokila Devi, Bhagyabati Patamahadei, Jambuvati Devi, Laxmibai,, Kishorimanidevi, Suryamma, Champa Devi	1 Credit
Total	4units	4credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Recommended Reading Materials:

Bowles and DuelliKleim (ed.): Theories of Women's Studies. London: Routledge & Kegan Paul, 1988.

Women in the Middle Ages: The Lives of Real Women in a Vibrant Age of Transition by Frances & Joseph Gies

A Vindication of the Rights of Woman by Mary Wollstonecraft

Position of Women in Hindu Civilization: From Prehistoric Time to the Present Day by A. S. Altekar |

Devadasis in South India: A Journey from Sacred to Profane Spaces by RekhaPande and Jeevandam

Pande, Rekha(ed), 2018, Gender and History

Pande Rekha, 2010, Divine Sounds from the Heart, Singing unfettered in their own voices-TheBhakti Movement and its Women saints (12th to 17th century), U.K.

Women in Modern India (The New Cambridge History of India) by Geraldine Forbes | 28 April 1999

Women in Colonial India by Geraldine Forbes 2004

Women and Society in Early Medieval India: Re-interpreting Epigraphs by Anjali

Verma | Women and Gender in Ancient India: A Study of Text and Inscription from Mauryan to Early Medieval India by Vijaya Laxmi Singh

Women in Ancient and Medieval India: 9 (History of Science, Philosophy & Culture in Indian Civilization) by Bhuvan Chandel 2009

Reconstruction of Women's History of India, *European Academic Research [EAR] Journal*, Vol. 3, Issue 2, by Sankarsan Malik & S. R. Shasini, 2015

Pre-eighteenth Century Oriya Literature and Women, *International Journal of Multidisciplinary Research and Development* Vol. II, No. 2, Part-F, 2015, 327-334 by Sankarsan Malik [2015]

Oriya Literature and Women: A Historical Analysis of Sarala Mahabharat, *Zenith International Journal of Multidisciplinary research*, Vol. V, No. 4, April 2015, 20-27 by Sankarsan Malik 2015

Role and Status of Indian Women through the Ages, by Bina Kumari Sarma, 2006

Women's Development and Social Conflicts: Historical Perspectives, by Utpala Nayak, 1999

The Bhauma-Karas of Orissa, by Umakanta Subudhi, 1978

Details of Syllabus

Course No. HIST E403

Course Name: History of Ancient India (from 550 AD to 1200 AD)

Semester: IV, Credits: 04

Core/Elective: CE

Objective and brief description on course and expectations: This course will provide basic ideas on ancient India. Political structure of the period will be analyzed and framed with logical expiation for better understanding. Temple structure and its development will be taught to the students.

Outcomes: Knowledge on ancient India for higher study and research purpose. It will help for all competitive examinations also.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. The dynasties of Deccan- the Chalukyas of Badami- the origin, expansion of the kingdom, culture and civilization of Chalukya period, religion, art and architecture. 2. The Rastrakutas–the origin, the political and cultural achievement of Rastrakutas– the role of rastrakutas in Tripartite struggle. 3. The Vakatakas-the Origin and original home of Vakatakas–the political history of Vakatakas 	1 credit
Unit-II	<ol style="list-style-type: none"> 1. The Pallavas-the origin, the early and political history of Pallavas-civilization and culture of Pallavas– the contribution of Pallavas in the art and architecture. 2. The Cholas-the origin-the political expansion of Cholas-Chola Administration. 3. The socio-economic life under the Chola-artand Architecture and culture of Chola dynasty. 	1 credit
Unit-III	<ol style="list-style-type: none"> 1. The rise of Turks-the aim and objectives of Invasion on India-the political condition of India. 2. Invasion of Mahamud of Ghazni-aim and motives. 3. Invasion of Mahamud of Ghorī–causes of success and impact of success 	1 credit
Unit-IV	<ol style="list-style-type: none"> 1. The evolution of Temple architecture in India. 2. Nagara and Dravida style of Temple architecture. 3. Vesara and Kalinga style of Temple architecture 	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Recommended book for reading:

- B.N.Puri**, :India Under the Kushanas,1965.
- B.N. Mukherjee**, : The Kushana Genealogy,1967
- R.D.Banerje** : Age of Imperial Guptas,1933
- S.R.Goyal**, : A History of the Imperial guptas,1967
- P.Maity**, : History of Ancient India,
- R.K.Mukherjee**,: The Gupta Empire,1969
- K.N.Saletore**,: Life in theGuptaAge,1943
- B.P.Sinha**, : Decline oftheKingdomofMagadha,1954
- D.Devahuti**,: Harsha, A PoliticalStudy,OUP,1970
- S.K.Maity**,: The Imperial Guptas and their Times,1975

Details of Syllabus

CourseNo. HIST E403 Course Name: Cultural History of Medieval India
Semester:IV, Credits: 04 Core/Elective:CE

Objective and brief description on course and expectations:Course is designed to provide information about the Indian culture particularly during medieval period. Medieval art, painting, music, literature, architecture and religious ideologies will be analyzed and taught to the students

Outcomes: Knowledge on Cultural history of medieval India. This paper will motivate students to do higher study and research on the subjects of this period. It will help for all competitive and professional examinations.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. Bhakti Movement – Shaktism, and Tantrism 2. The Sikh Movement – Guru Nanak Dev: his teachings and practices, AdiGranth; the Khalsa. 3. Maharstra Dharma: principles, leaders and impacts on the Society 	1 Credit
Unit-II	<ol style="list-style-type: none"> 1. Fine Arts – Major Schools of Painting – Mughal, Rajasthani, Pahari, Garhwali, Madhubani, Deccani and Orissapainting 2. Development of Literature: Court literature, translated literature, regional literature; Development of Music, Instruments, its impact on the society 3. Art and Architecture - Indo Islamic architectures and Temples, Regional Styles 	1 Credit
Unit-III	<ol style="list-style-type: none"> 1. Impact of Islam culture on Indian society and religion 2. The Saints of the Medieval Period – saints from South India and their impact on Socio Political and Religious Life. 3. Medieval Architecture,- Mughal Architecture and Gardens 	1 credit
Unit-IV	<ol style="list-style-type: none"> 1. Medieval Education system: womens education, court and private libraries 2. Women during medieval India: patriarchal laws and religious principles and her position 3. European traders and their settlements, and social life in the last part of the medieval India 	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Recommended Reading Materials:

Alavi, S. ed. : The Eighteenth Century in India. New Delhi: Oxford University Press, 2002.

Ali, Athar. : The Mughal Nobility under Aurangzeb. New edition, New Delhi: Oxford University Press 1997.

Asher, C. : Architecture of Mughal India. Cambridge: Cambridge University Press, 1992.

Beach, M.C.: Mughal and Rajput Paintings. The New Cambridge History of India Vol.1.3, Cambridge: Cambridge University Press, 1992.

Koch, E., : Mughal Art and Imperial Ideology. New Delhi:Oxford University Press 2002.

Raychaudhuri, T and I. Habib, eds. : Cambridge Economic History of India, Vol. I. Cambridge: Cambridge University Press, 1982.

Michell, G. and M. Zebrowski.: Architecture and Art of the Deccan Sultanates. Part 1, vol. 7, Cambridge: Cambridge University Press,1999.

Koch, Ebba. : Mughal Art and Imperial Ideology: Collected Essays. New Delhi: Oxford University Press, 2001.

Hasan, N. : Religion, State and Society: Collected works of NurulHasan. New Delhi: Oxford University Press, 2005. revisededn., New Delhi: Oxford University Press, 1999.

Details of Syllabus

Course No.HIST E403

Course Name: History of Modern Education in India

Semester:IV, Credits: 04

Core/Elective: CE

Objective and brief description on course and expectations: This paper will provide the information on condition of Education in India and efforts made by different Committee and Commission for the growth and development of modern Education in India. Students will know to develop moral and basic education through this paper.

Outcomes: Knowledge on modern education and its development during colonial and post-colonial periods. This paper designed for understanding Indian education and motivate for more research on this subject. To create healthy and ethical society, this paper can help to produce well-educated citizens. It will help for all competitive examinations and career.

Course Details

Chapter	Contents	
Unit-I	1. Early efforts to foster Oriental Learning 2. Growing popularity of Western Learning and Raja Ram Mohan Roy 3. Orientalist- Anglicist Controversy	1 credit
Unit-II	1. Charles Wood's Despatch act on Education-1854 2. The Hunter Education Commission-1882-83 3. The Indian Universities Act.-1904	1 credit
Unit-III	1. Government Resolution on Education Policy-February 1913 2. The Sadler University Commission-1917-19 & The Hartog Committee-1929 3. Wardha Scheme of Basic Education & Sargeant Plan of Education	1 credit
Unit-IV	1. Radhakrishnan Commission-1948-49 & University Grants Commission 2. Kothari Education Commission-1964-66 3. New Education Policy/National Education Policy-2020	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES:

R.P.Pathak, Education in Modern India: Global Trends and Development

J.C.Aggarwal, Development of education system in India

J.C.Aggarwal, Modern Indian Education-History, Development and Problems

J.C.Aggarwal, Landmarks in the History of Modern Indian Education

B.L.Grover&S.Grover, A New Look At Modern Indian History
 Suresh Chandra Ghosh, The History of Education in Modern India 1757-2002
 M.L.Dhawan(Edt.) Issues in Indian Education
 R.P.Pathak, History, Development and Contemporary Problems of Indian
 Education

Details of Syllabus

Course No.HIST E404

Course Name: Economic History of Ancient India

Semester:IV, Credits: 04

Core/Elective: CE

Objective and brief description on course and expectations : This course is designed to teach student about the economic life of the people of ancient India.

Outcomes: Knowledge on economic history and the process of economic activities in ancient India. It will help for all competitive examinations and jobs.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. The economic development of Indus civilization: occupations, industries and trade 2. Vedic Pastoral Economy, 3. Pre-Mauryan- Economy: Rise of Urban Centres, Trade routes, introduction of Coinage 	1 credit
Unit-II	<ol style="list-style-type: none"> 1. Mauryan Period-Economy Trade and Commerce, Maritime Activities 2. Post-Mauryan Period-, Growth of Urban Centres, Economy and Coinage. 3. The Guild System in AncientI ndia, 	1 credit

Unit-III	<ol style="list-style-type: none"> 1. Gupta Period- Agrarian Economy, Trade and Commerce, and Feudalism 2. Post Gupta period Economy: Land System, Agrarian Relation, Trade and Commerce, Guild System and Urban Decay. 3. land grants, changing production relations; land rights and peasantry, water resources, taxation system, coins and currency system during 600-1200 AD 	1 credit
Unit-IV	<ol style="list-style-type: none"> 1. Chola and Pandyas Economy: Trade and Commerce, Maritime Activities. 2. Economy in Regional States of India–Kadambas, Gangas, Pallavas, Chalukyas. 3. Role of temples in economic activities of ancient India 	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

Recommended Reading Materials:

- B.N.Puri**, ; India Under the Kushanas,1965.
- B.N. Mukherjee**, : The Kushana Genealogy,1967
- R.D.Banerje** : Age of Imperial Guptas,1933
- S.R.Goyal**,: A History of the Imperial guptas,1967
- P.Maity**, : History of Ancient India,
- R.K.Mukherjee**,: The Gupta Empire,1969
- K.N.Saletore**,: Life in the Gupta Age,1943
- B.P.Sinha**,: Decline of the Kingdom of Magadha,1954
- D.Devahuti**,: Harsha, A Political Study,OUP,1970
- S.K.Maity**,: The Imperial Guptas and their Times,1975

Details of Syllabus

Course No. HIST E404 **Course Name: Socio-Economic and Religious Studies of Medieval India**

Semester: IV, Credits: 04 **Core/Elective: CE**

Objective and brief description on course and expectations: This course is designed to teach student about the socio-economic and religious life of the people of Medieval India.

Outcomes: Knowledge and understanding on medieval Indian society, economy and religious life. This paper is important for all human being to understand the value of social and religious life. Learn to maintain a good economic plan for existence. This paper can motivate for higher study and research. It will help for all competitive examinations and career.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. Decline of Mughal empire: debates, new theories 2. Social Classification: -Ruling Class, Major Religious Groups, the Ulemas, the Mercantile and Professional Classes – Rajput Society 3. Rural society – Petty Chieftains, Village Officials, Cultivators and Non-Cultivating Classes, Artisans. 	1 credit
Unit-II	<ol style="list-style-type: none"> 1. Travelers and their accounts on Indian society and culture 2. Administrative institutions: Mansabdary and Jagirdary system, madad-i-ma_ash , zabt during Mughal periods 3. Trade and commerce and communication during Mughal periods 	1 credit
Unit-III	<ol style="list-style-type: none"> 1. Religious politics -Sulh -i- Kul; Sufi interventions- Shattaris and Chishtis, religious harmony of the period 2. Akbar’s religious policy and consolidation of empire 3. Reassessing Aurangzeb: Jaziya, temple grant, music and relations with the Sikh Gurus 	1 credit

Unit-IV	<ol style="list-style-type: none"> 1. Architecture and importance of Forts – Fatefursikri, Red fort, Agra fort, Forts in Marwar, Forts of Marathas, and other forts in India 2. Temples and gopurams of the Nayakas; Regional temple architecture, palaces 3. Regional literature, music, dance and religious dance 	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

References for essential reading:-

Alam, M. and S. Subrahmanyam, eds. : The Mughal State 1526-1750. New Delhi: Oxford University Press, 1998.

Alavi, S. ed. : The Eighteenth Century in India. New Delhi: Oxford University Press, 2002.

Ali, Athar. : The Mughal Nobility under Aurangzeb. New edition, New Delhi: Oxford University Press 1997.

Asher, C. : Architecture of Mughal India. Cambridge: Cambridge University Press, 1992.

Beach, M.C. : Mughal and Rajput Paintings. The New Cambridge History of India Vol.1.3, Cambridge: Cambridge University Press, 1992.

Bhargava, M., ed.: The Decline of the Mughal Empire. New Delhi: Oxford University Press 2014.

Blake, S. Shahjahanabad: The Sovereign City in Mughal India 1639-1739. New Delhi: Cambridge University Press, 1993.

Brown, K. B. :-Did Aurangzeb Ban Music? Questions for the Historiography of his Reign. | Modern Asian Studies, 41/1 (2007): 77-120.

Chandra, S. :Mughal Religious Policies, the Rajputs and the Deccan. New Delhi: Vikas Publishing House, 1993.

Chatterjee, K.: -The Persianization of Itihasa. | Journal of Asian Studies, 67, 2

(May 2008): 513-543.

Dalmia, V. and M.D. Faruqui, eds. : Religious Interactions in Mughal India.

New Delhi: Oxford University Press, 2014.

Gordon, S. : The Marathas, 1600-1818. Cambridge: Cambridge University Press, 1993.

Habib, I. : The Agrarian System of Mughal India 1556-1707. Revised edition, New Delhi: Oxford University Press, 1999.

Koch, E.,: Mughal Art and Imperial Ideology. New Delhi: Oxford University Press 2002.

Lal, R. : Domesticity and Power in the Early Mughal World. Cambridge: Cambridge University Press, 2005.

Lefevre, C.:- Recovering a Missing Voice from Mughal India: The Imperial Discourse of Jahangir (r. 1605-1627) in his Memoirs. || Journal of the Economic and Social History of the Orient, 50, 4 (2007).

O'Hanlon, R. :- Manliness and Imperial Service in Mughal North India. || Journal of the Economic and Social History of the Orient, 42, 1 (1999).

Pollock, Sheldon, ed.: Literary Cultures in History, Reconstructions from South Asia. Berkeley: University of California Press, 2003.

Raychaudhuri, T and I. Habib, eds. : Cambridge Economic History of India, Vol. I. Cambridge: Cambridge University Press, 1982.

Richards, J.F. : The Mughal Empire: The New Cambridge History of India, Vol. I. 5. Reprint, Cambridge, Cambridge University Press, 2007.

Details of Syllabus

**Course No. HIST E404,
Semester: IV, Credits: 04**

**Course Name: Socio-Cultural History of Modern India
Core/Elective: CE**

Objective and brief description on course and expectations: Students will get information on the socio-cultural life of people of Modern India. Social structure and cultural diversities of the Indian society would be the main subject of this course teaching.

Outcomes: Knowledge and understanding on socio-cultural history of modern period. Inspire the student to choose this subject for research more value oriented outcomes for the social welfare and developments. It will help for all competitive examinations and jobs.

Course Details

Chapter	Contents	
Unit-I	<ol style="list-style-type: none"> 1. British Understanding of Indian Society: Orientalists, Evangelicals & Utilitarian 2. Renaissance in India 3. Activities of Christian Missionaries 	1 credit
Unit-II	<ol style="list-style-type: none"> 1. Development of English Education- 2. Socio-religious reforms: Brahmo Samaj, Arya Samaj, Prarthana Samaj 3. Satyashodhak Samaj, Theosophical Movement. 	1 credit
Unit-III	<ol style="list-style-type: none"> 1. Women's Question-Nationalist Discourse on Sati, Widow Remarriage, Constitutional Position, Abolition of Infanticide & Human Sacrifice 2. Development of Printing Press-journalist activity & the public opinion 3. Modernization of Indian Languages and literary forms-reorientation in Painting, music and performing arts 	1 credit
Unit-IV	<ol style="list-style-type: none"> 1. Caste Movements-Jyotiba Phule & Dr.B.R.Ambedkar 2. Sri Narayana Movement in Kerala 3. Non-Brahmin Movement in Tamilnadu-Periyar E.V.Ramaswamy 	1 credit
Total	4units	4 credits

Attendance of Lectures:

The university policy of minimum attendance of 75% for classroom lectures will be implemented strictly.

BOOK LIST/REFERENCES:

A.L. Basham(ed) : *Cultural History of India*, OUP, New Delhi, 2011.

B.N. Luniya, : *Indian History and Culture*, New Delhi, 1980.

Burton Stein, : *A History of India*, OUP, New Delhi, 1998.

J.L.Metha, : *Advanced Studies in Medieval India*, vols I-III, Sterling, New Delhi, 1992.

M. Athar Ali, : *The Mughal Nobility under Aurangzeb*, OUP, New Delhi, 1997.

R.C. Majumdar, :*An Advanced History of India*, Macmillan

R.Champaklalahami&S.Gopal(eds): *Traditions, Dissentand Ideology*, OUP, New Delhi,2006.

S.A. A. Rizvi, :*The Wonder that was India*,vol.II,PenguinBooks,2000.

S.NurulHassan:*ThoughtsonAgrarianRelationsinMughalIndia*,PPH,New Delhi,2000.

SatishChandra(ed.):*Religion,StateandSocietyinMedievalIndia(CollectedEssays of S. Nurul Hassan)*, OUP, New Delhi, 2008.

Satish Chandra: *Essays on Medieval Indian History*,OUP ,New Delhi,2004.

Satish Chandra: *Medieval India*, Pt.-II, (1526-1748),Har- Anand Publication, New Delhi,2001.

Details of Syllabus

Course No.HIST C405

Course Name: Dissertation

Semester:IV

Core/Elective: CC

Credits: 04(2+1+1=4credit)

Marks: 100 [50+25+25]

Evaluation of Dissertation- Two[2] credit (50 marks) will be evaluated by external examiner [dissertation evaluation] and 1 credit(25 marks) by respective supervisor and 1credit from Presentation of Dissertation evaluated by the Teacher Council along with External.

Topic will be allotted to the students in the beginning of the 3rd semester classes. Students must have to write project not less than 40 pages typed in 1.5 spaces and 12 letter size with Times New Roman font style. All project works/dissertations should follow the academic and research ethics. Copy past work will be considered as unethical and punishable work and credit will be minuses for this.

Details of Syllabus

Course No. Add-on Course,

Course Name: Cultural Heritage of South Odisha

Semester:IV,

Core/Elective:CC

Credits: Non-Credit Course

Course Details

Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as 'BHANJA BIHAR'. South Odisha is the adorable storehouse of

literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha.

Details of the Course

This Paper consists of 50 marks with following 4 Units.

Unit-I: Literary works of Kabi Samrat Upendra Bhanja

Unit-II: Other Litterateurs of South Odisha

Unit-III: Cultural Heritage of South Odisha

Unit-IV: Folk and Tribal Traditions of South Odisha

The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will inspire adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale.

M.A./M.Sc. HOME SCIENCE

(CHOICE BASED CREDIT SYSTEM)

(2023-2024 onwards)

(2-Years P.G. Programme)

P.G. DEPARTMENT OF HOME SCIENCE

BERHAMPUR UNIVERSITY, 760007

COURSE PLAN: -

The syllabus of Master of Home Science is full time two years programme with four semesters. The uniform nature of credits specified for the Master's Program describe the equitable weightages of various courses of the program. The number of credits along with grade points that a student satisfactorily completed, measures the performance of the student. Satisfactory progress and completion of course are subject to a student's maintaining of a minimum Cumulative Grade Point Average (CGPA), as well as minimum grades in different subjects of the programme.

Total No. of Semesters: - 4

- In first semester all the courses are compulsory (mandatory with no choice).
- In second semester all the courses are compulsory (mandatory with no choice). In addition to this one non -credit value added course HOME VAC-206 (Nursery Teacher Training) is there and is also compulsory.
- In third semester two core (compulsory), three electives /specialization (a student can opt for any one elective as per choice) papers are there. One choice based open course (HSCT-300) is there and any student from other disciplines can opt for the same except Home Science students. In third semester one non -credit value added course HOME VAC-309 (Yoga and health) is there and is also compulsory.
- In fourth semester three core (compulsory), three electives / specialization (a student can opt for any one specialization as per choice opted in 3rd semester). In fourth semester one non -credit Addon course HOME AC-410 (CULTURAL HERITAGE OF SOUTH ODISHA (ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସଂସ୍କୃତିକ ବିଭବ) is there and which is compulsory for all students.

PROGRAMME OUTCOME

The syllabus is designed on Choice Based Credit system in accordance with the guidelines provided by the University grand Commission. The syllabus of Master of Home Science is full time two years programme with four semesters. The uniform nature of credits specified for the master's programme describes the equitable weightages of various courses of the programme the number of credits along with grade points that a student's satisfactorily completed, measures the performance of the students. Satisfactory progress and completion and completion of course are subject to a student's maintaining of a minimum Cumulative Grade Point Average (CGPA) as well as minimum grades in different subjects of the programme description and a lay out of Credit Distribution for the course programme is detailed below.

M.A HOME SCIENCE

Course Structure

(2023-24)

FIRST SEMESTER						
Course code	Title of the paper	Credit	Core/Elective	Internal	External	Mark
HOME C101	EXTENSION EDUCATION	4	Core	20	80	100
HOME C102	FOODS AND NUTRITION	4	Core	20	80	100
HOME C103	HUMAN DEVELOPMENT	4	Core	20	80	100
HOME C104	FAMILY SOCIOLOGY	4	Core	20	80	100
HOME C105	PRACTICAL	4	Core	20 (Record)	80	100
	Total	20	-	100	400	500
SECOND SEMESTER						
Course Code	Title of the paper	Credit	Core/Elective	Internal	External	Mark
HOME C201	FAMILY RESOURCE MANAGEMENT	4	Core	20	80	100
HOME C202	TEXTILES AND CLOTHING	4	Core	20	80	100
HOME C203	COMMUNITY HEALTH	4	Core	20	80	100
HOME C204	COUNSELING AND GUIDANCE	4	Core	20	80	100
HOME C205	PRACTICAL	4	Core	20 (Record)	80	100
HOME VAC-206	NURSERY TEACHER TRAINING (NTT)			NONCREDIT COURSE		Grade
	Total	20	-	100	400	500

THIRD SEMESTER						
Course Code	Title of the paper	Credit	Core/Elective	Internal	External	Mark
HOME C-301	RESEARCH METHODOLOGY	4	Core	20	80	100
HOME C302	MENTAL HEALTH AND LIFE STYLE	4	Core	20	80	100
HOME E-303	EXTENSION AND COMMUNICATION TECHNOLOGIES	4	Elective	20	80	100
HOME E-304	COMMUNICATION IN RURAL DEVELOPMENT	4	Elective	20	80	100
HOME E-305	EARLY CHILDHOOD CARE AND EDUCATION	4	Elective	20	80	100
HOME E 306	EXCEPTIONAL CHILDREN	4	Elective	20	80	100
HOME C-307	FOOD SERVICE MANAGEMENT	4	Core	20	80	100
HOME C-308	CLINICAL NUTRITION AND DIETETICS	4	Core	20	80	100
HSCT-300	FAMILY AND COMMUNITY SCIENCE	4	CBCT	20	80	100

HOME VAC-309	YOGA AND HEALTH	NON- CREDIT				Grade
	Total	4		100	400	500
FOURTH SEMESTER						
Course Code	Title of the paper	Credit	Core/ Elective	Internal	External	Mark
HOME C-401	CHILD STUDY AND FAMILY RELATIONS	4	Core	20	80	100
HOME C- 402	NUTRITION THROUGH LIFE CYCLE	4	Core	20	80	100
HOME C-403	POPULATION STUDIES AND CONSUMER EDUCATION.	4	Core	20	80	100
HOME E-404	EXTENSION TRAINING AND ADMINISTRATION	4	Elective	20	80	100
HOME E 405	THEORIES OF CHILD DEVELOPMENT	4	Elective	20	80	100
HOME E-406	FOOD SCIENCE	4	Elective	20	80	100
HOME E-407	DISSERTATION /INTERNSHIP (Extension Education)	4	Elective	20	80	100
HOME E-408	DISSERTATION /INTERNSHIP (Human Development)	4	Elective	20	80	100
HOME E-409	DISSERTATION /INTERNSHIP (Food and Nutrition)	4	Elective	20	80	100
HOME AC-410	CULTURAL HERITAGE OF SOUTH ODISHA (ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସଂସ୍କୃତି ଓ କବିତା)	NON-CREDIT COURSE				
	Total	20	-	100	400	500
	Grand Total	80		400	1600	2000

Choice of any one specialization comprises of the following papers in 3rd and 4th semester in addition to the core (compulsory) papers.

- ❖ A student can opt for HOME (E-303, E-304 E-404 & E-407)

❖ A student can opt for HOME (E-305, E-306 E-405 & E-408)

❖ A student can opt for HOME (E-307, E-308 E-406 & E-409)

SEMESTER-1
HOME C-101: Extension education

Course code	Title of the paper	credit	Internal mark	External mark
HOME C-101	EXTENSION EDUCATION	04	20	80

Course out comes

- To learn the basic objectives of the extension education in overall development of the rural people & helps in studying and solving the rural problems
- To bring about desirable changes in the human behavior, which includes change in knowledge, skill and attitude through communication technologies

Unit – I

- Extension Education – Concept, need, scope, and objectives.
- Philosophy of extension, principles of extension work.
- Competencies (ability) needed by extension worker.
- Home Science Extension education.

Unit – II

Agriculture and Home Science Extension Programme.

- Intensive Agriculture District Program (IADP), Intensive Agricultural Area Development Program (IAADP), Intensive Cattle Development Project, High Yielding Variety Program, IRDP, NREP
- Home Science Extension Programme: -objectives & activities of the following programme Integrated Child Development Programme (ICDS), Balika Samridhi Yojana (BSY), Kishori Shakti Yojana (KSY), Rajiv Gandhi National Scheme for the Children of Working Mother, One stop center (Sakhi).
- Community Development – Meaning, aim and objectives, essential elements, philosophy, principles of community development.

Unit – III

Communication in Extension

- Communication Systems – Concept, significance, types/forms, elements, functions of communication
- Models of communication: Aristotle’s Model, Losswell’s Model, Shammol and weaver Model, Osgood & Schramm’s Model, The Riley’s Model, Berlo’s Model, Leagan’s Model. Advantages and disadvantages of model.
- Problems in communication, obstruction in communication, role of communication for social change

Unit – IV

Principles of Teaching and Learning

- Learning -Meaning, Laws & principles of learning. Learning experiences
- Types of learning: Conditioning, verbal learning, motor learning, perceptual learning, attitude learning, problem solving
- Teaching – Meaning, factors contributing to teaching, principles of teaching.
- steps in extension teaching- attention, interest, desire, conviction, action, satisfaction
- Principles of learning and criteria for effective learning

HOME C- 102 FOOD AND NUTRITION

Course Code	Title of the paper	credit	Internal mark	External mark
HOME C-102	FOOD AND NUTRITION	04	20	80

Course out comes:

- To gain knowledge on importance of nutrition and its nutritive value
- To learn the nutrition related deficiencies.
- To learn the food quality control assessment, food laws, prevention method, storage method etc.

Unit – I

- Definition and Importance of Nutrition and Nutrients - Important physical phenomenon influencing the reaction of living matter. i) surface tension, ii) colloidal states iii) permeability iv) Osmotic pressure v) Hydrogenation concentration.
- Energy – Calorie, Joule, Calorimetry, Methods of determination of energy requirements.
- Measurement of energy content of food by Bomb calorimeter. Direct and Indirect calorimetry. Energy needs of the Body-RMR-BMR-
- Factors influencing BMR calculation and factors influencing energy needs. Food sources of calories. Proportion of CHO, Proteins, Fats to supply nutrients in the diet.

Unit – II

- Carbohydrates – Definition-classification, Functions, Sources, requirements, deficiencies, Digestion, absorption, Metabolism of CHO in the body.
- Proteins – Definition- Classification, Functions, Sources, Requirements, Deficiencies, Digestion, Absorption, Metabolism-Biological value-PER-NPU-SDA. Nitrogen Balance-Protein synthesis Protein stores. Supplementary value of proteins.
- Fats and Lipids – Definition – Classification – Functions – Sources – Requirements – Deficiency, Digestion. Absorption, Metabolism-Essential Fatty acids and their nature-Cholesterol and saturated Fatty acids in the Human body.

Unit – III

- Nutritional Disorders – Deficiency of all vitamins, minerals, prevention. Protein Calorie Malnutrition
 - Causes, symptoms, biochemical, metabolic changes, prevention and treatment. Anemia and Osteomalacia - Definition, causes, symptoms prevention. Nutritional status and methods of assessing nutritional status.

- Food Quality Assessment – Causes of spoilage. Safety and Care of Food Supply – Microbial hazards, Residue Pollutants, Natural toxicants in Foods, Food Poisoning.
- Types of Microorganism - Test for contaminations, microbial infestations and toxication. Proper storage and handling of foods.

Unit – IV

- Food analysis and biochemistry of different types of foods of major food groups.
- Food Additives – Flavoring agents, coloring agents, leavening agents, stabilizers, thickeners and their usages.
- Food Laws – Subjective and objective methods of measuring quality for food production.
- Measurement of food palatability, acceptance, food testing, objectives. Testing density, volume, tenderness, viscosity-weight, moisture etc.

HOME C-103

HUMAN DEVELOPMENT

Course Code	Title of the paper	credit	Internal mark	External mark
HOME C-103	HUMAN DEVELOPMENT	04	20	80

Course out comes:

- To learn and gain the basic principle of human development
- To learn the overall developmental process in different stages of life

Unit – I

- Human Development – Meaning, period, process and theories of Human Development (Jean Piaget, Sigmund Freud, Erik Erickson).
- Basic of Human Development – Genes and Chromosomes. Role of Heredity and Environment, Nature and Nurture in determining intelligence, personality and Behavior. Principles of development.
- Prenatal Growth and Development – Stages of development. Factors influencing prenatal growth and development. Birth process and complications.

Unit – II

- Infancy – Physical, Motor, Social-Emotional, cognitive and Language development, developmental tasks.
- Early Childhood Years – Physical, Motor, Social Emotional, cognitive and Language development, Developmental tasks.

Unit – III

- Late Childhood Years – Physical, Language-Emotional, Social, Intellectual and Moral development. Developmental tasks.
- Adolescence – Physical changes and health needs-changes in social behavior Development of emotional maturity. Interests and heterosexual relationship. Developmental tasks and problems. Drug abuse, types, causes, treatment and rehabilitation.

Unit – IV

- Adulthood (Early and Late) – Developmental tasks, personal and social adjustments, problems, vocational and marital adjustments.
- Old Age – The course of physical development, cognitive functioning, mental health issues and socio-emotional development.

HOME C- 104 FAMILY SOCIOLOGY AND WOMEN STUDIES

Course code	Title of the paper	credit	Internal mark	External mark
HOME C-104	FAMILY SOCIOLOGY AND WOMEN STUDIES	04	20	80

Course out comes:

- To understand society, individual, physical growth and mental health.
- To explain development for individual, family and community by different human development theories.

Unit – I

- Theories of Family - Developmental theory, Conflict theory, system theory, Functional – Structural Theory.
- Conceptual framework for understanding Family – Family as a social system. Family dynamics, assessment and intervention.
- Contemporary Family types - Nuclear, Joint, Extended, Alternate Families, Single parent, Childless, Female headed and unitary families.

Unit – II

- Causes and consequences of transition in the Indian family system.
- Family Problems – Marital conflicts, Dissolution of marriage. Divorce and its effect on family and society, Separation, causes of Divorce, Dowry - Dowry Prohibition Act. Unemployment, Sickness, Accidents, their remedies.
- Family Life Education – meaning, need, subject matter, target group for family life Education.

Unit – III

- Status of women in Indian society: Health, reproductive health, education, employment, social status.
- Women and Human Rights – Violence against women across life span (Childhood, adolescence, marital, elderly years). Violence against women within Home (domestic violence), at Work places and in Society (political and social).
- Changing Role of Women - Working women and their problems, role conflicts in women.

Unit – IV

- Women and Law: Marriage (Hindu), Law of Divorce, Dowry prohibition Act., Adoption and Guardianship, Property, Domestic Violence Act – IPC 498 (A).
- National Family Policy – Social policies and the family provisions under the Ministry of Women and Child Development, Urban and Rural Development.
- Role of Family, Government and different organizations in the care and welfare of the Elderly. Legal and Welfare Measures for the Elderly

HOME C- 105 PRACTICAL

Course code	Title of the paper	credit	Full mark
HOME C-105	Practical	04	100
Course out comes: <ul style="list-style-type: none">➤ To learn the assessment of nutritional status.➤ To understand the different developmental process by interview, case study and survey.➤ To learn the importance of education in women empowerment and gender equality in the society			

Foods and Nutrition:

- ❖ Assessing nutritional status of infants, school going children, men and women of different income and working class.
- ❖ Menu making and meal planning – Formulation and calculation of low-cost supplementary foods for pre-school children.

Extension Education and Communication:

- ❖ Preparation of Audio-visual aids (any three) for Extension Education on different branches of Home Science (Poster/Chart/ Graph/ Leaflet/ Puppet/ Stories etc.).
- ❖ Collection of newspaper clippings on any social issues (Women empowerment, child abuse/violence against women/child and maternal health/environmental pollution).

Human Development:

- ❖ Observation and recording of physical, motor and language development of preschool children.
- ❖ Studying adolescent problems through interview/case study/survey.

Family Sociology and Women's Studies:

- ❖ Study of attitude towards women's education and employment.
- ❖ Situational analysis of gender equality and equ

SECOND SEMESTER

HOME C-201

FAMILY RESOURCE MANAGEMENT

Course code	Title of the paper	credit	Internal mark	External mark
HOME C-201	FAMILY RESOURCE MANAGEMENT	04	20	80

Course outcomes:

- To learn the important process of home management to manage the family
- To learn the use of both human and non-human resources to achieve the family goals.

Unit – I

- Management – Meaning – Definition – Importance – process and functions of Management.
- Planning, organizing, controlling and Evaluating – Planning – Objectives, Principles and Types of planning.
- Decision Making- Meaning and types of decisions. Steps, process, techniques used in decision making.

Unit – II

- Management of Family Resources – Management of energy, fatigue, energy savings methods and devices.
- Management of Time – Meaning, principles, methods and devices used for time saving.
- Management of Money - Meaning, types, functions of money, types of Income and supplementary income.

Unit – III

- Family Budget - Fundamental Principles of Accounts - Income and Expenditure Account Keeping.
- Fundamental Principles of Accounts - Income and Expenditure Account Keeping.
- Saving-Importance and Need of savings. Types of savings. Different types of Banks and their functions. Types of savings accounts and different organizations for savings and insurance.

Unit – IV

- Interior Decoration – Principles, Elements and objectives of Design or Beauty. Color: Elements of color, combinations of color and their applications.
- Selection of Site – Planning of a House. Different aspects of housing - Building materials for different income groups, ventilation and lighting.
- Kitchen Planning - Types of kitchens (one-wall, two-wall, U shape, L shape) kitchen plan, work simplification of kitchen, designing and layout of kitchens. Heights of work surface suitable for an average woman in the Kitchen. Modular Kitchen concept.
- Storages space, types of storages, planning and layout of storage space, sanitation and safety, service area planning and decoration of service areas.

HOME C-202 TEXTILE AND CLOTHING

Course code	Title of the paper	credit	Internal mark	External mark
HOME C-202	TEXTILE AND CLOTHING	04	20	80

Course outcomes:

- To learn the process of identification of different textile materials like fiber, yarn and fabric.
- To know the fabric construction by different weaving methods.
- To understand the different finishing process, printing methods of fabric

Unit-I

- Textile Fibers – Classification of fibers, structure, physical and chemical properties of cotton, silk, wool, polyester, nylon, rayon fibers.
- Yarn Formation – Staple yarns and filaments yarns and their formation process.
- Finishing Process of fabrics - Types of finishing process, preparatory process, stabilizing process, textural process

Unit - II

- Fabric Construction – Weaving: Essentials of weaving operation
- Classification of weaves – Plain, basket, ribbed, twill, satin, crepe, pile, double-cloth, Gauze, swivel, lappet, dobby, and jacquard.
- Selvages – Types, thread count, wrap and filling.

Unit - III

- Finishing with Colour - Dying of Fabric: Selection of dye, natural and synthetic dyes. Dyeing methods – stock dying, top dying, yarn dying, and piece dying.
- Printing of Fabric – Distinction between printing and dyeing. Dye used for printing. Methods of printing – Direct, Discharge, Resist, Block, Roller, Duplex, Screen, Stencil, Transfer printing.

Unit -IV

- Principles of Clothing - selection of fabrics for family. Wardrobe planning for the family.
- Clothing Construction - Basic principles of drafting, flat pattern and draping methods.
- Colour Systems – Dimension of colour, colour combination and harmony in clothing. Test to determine colour fastness to washing, pressing, light, perspiration, crocking, gas fading.

HOME C-203 COMMUNITY HEALTH

Course code	Title of the paper	credit	Internal mark	External mark
HOME C-203	COMMUNITY HEALTH	04	20	80

Course out comes:

- To learn about public health in different communities.
- To know about the different community health problems such as respiratory infection, intestinal infection, arthropod-borne infection and sexually transmitted diseases etc.

Unit – I

- Concept of Health – Meaning, definitions. Positive Health and the concept of wellbeing, Dimensions of Health such as Physical, Mental, Social, Spiritual, Emotional.
- Determinants of Health: Biological, Behavioral, Socio cultural, environmental, socioeconomical and other factors.
- Rights to Health and responsibility for Health – Individual, Community, State and International responsibility.

Unit – II

- Indicators of Health - Mortality, morbidity, disability, nutritional status, health care delivery, utilization rates, indicators of social and mental health, environmental, socio- economic health policy, quality of Life, other indicators.
- Measurement of Morbidity, Vital Statistics - Morbidity Indicators - Sex Ratio.

Unit – III

- Respiratory Infections: Measles, Influenza, Diphtheria, Whooping Cough, Tuberculosis, their symptoms, causes, prevention and treatment.
- Intestinal infections: Poliomyelitis, Viral Hepatitis, Cholera, Diarrhoea, Typhoid, Food poisoning, Amoebiasis, Hookworm, their symptoms, causes, prevention and treatment.
- Arthropod-Borne Infections: Dengue, Malaria, Filariasis, their symptoms, causes, prevention and treatment.

Unit -IV

- Surface Infection: Trachoma, Tetanus, Leprosy, their symptoms, causes, prevention and treatment.
- Sexually Transmitted diseases: Types, symptoms, causes, prevention and treatment.
- HIV/AIDS: Symptoms, causes, sources, prevention and treatment. Welfare programs for HIV/AIDS affecte

HOME C-204 COUNSELLING AND GUIDANCE

Course code	Title of the paper	credit	Internal mark	External mark
HOME C--203	COUNSELLING AND GUIDANCE	04	20	80

Course out comes:

- To know about the concept of counselling and guidance
- To learn the different types of counselling techniques and the need of counselling in different areas such as family, marriage counselling, etc.
- To learn the guidance in educational institutions.

Unit-I

- Concept of Counselling – Meaning, significances, scope, and principles of Counselling.
- Theories of Counselling – Behavioral, Psychodynamic and Family therapy.

Unit – II

- Techniques of Counselling – Directive, non-directive, eclectic, psychodrama, play therapy, behavioral therapy (relaxation training, systematic desensitization, modelling, positive reinforcement, charting, systematic generalizations of behavior).
- Types of Counselling – Individual and group Counselling, their need, settings and outcome of the Counselling.

Unit – III

- Role of different Psychometric tests in Counselling – Aptitude, intelligence, personality and other socio-metric tests.
- Areas of Counselling – Marriage Counselling (pre and post marital), Parental Counselling, Counselling to drug addicts.
- Family Counselling – Dual earner families, child maltreatment and child abuse, adolescent depression and problems. Violence in the family. Counselling for the elderly – Significance and area.

Unit – IV

- Guidance in Educational setting – Educational guidance, guidance needs related to education, guidance at elementary school, secondary

school counselling level, guidance towards life goals.

- Counselling in Educational setting – Counselling the elementary school and high school children, counselling at college, and role of teachers in counselling.
- Vocational Guidance and Counselling – Theories of vocational development. Process of vocational counselling. Distinction between vocational guidance and counselling.

***HOME VAC- 206**

NURSERY TEACHER TRAINING (NTT) (NON-CREDIT)

Course code	Title of the paper	Credit	Total mark
HOME VAC -206	NURSERY TEACHER TRAINING (NTT)	Non- credit	100

Course objectives:

1. To enable the students to have good health.
2. To motivate the students to learn how to lead stress free life.
3. To Practice asanas and meditation.

Course out comes:

1. To obtain Physical & Mental fitness.
2. Inculcating creativity among the students
3. Developing positive & wholesome attitude towards life.

Unit

-IBASICS OF THE PRE-SCHOOL EDUCATION

- Meaning, Significance and Objectives of Preschool Education.
- Benefits of Child Care- Nutritional /Health Care of Preschool Children

Unit-II

TEACHING METHODOLOGY

- Meaning, Objectives, Methods of Teaching/Factors affecting Teaching for (Preschool) Children
- Contribution of Philosophers- John Dewey, Maria Montessori, Mahatma Gandhi, Sri Aurobindo.

Unit-III

NURSERY SCHOOL ORGANIZATION

- Understanding Children-Meaning, Importance and scope of Child Psychology
- Areas of Child Development-Physical, Cognitive, Social, Emotional, Language
- Role of Play for Preschool Children–Types, Values and role of Play for Preschool children.

PRACTICAL-

- Prepare a Poster on Philosophy of Mahatma Gandhi and Maria Montessori
- Prepare a Low-Cost Play Equipment for a Preschool Child
- Prepare a Poster on Celebration of any Festival in Play School
- Prepare a Four Week Health Chart for Preschool Child who is of four-week-old
- Prepare a one-day activity plan for a Preschool Child
- Plan one day activity for a preschool child.

THIRD SEMESTER

HOME C- 301 RESEARCH METHODOLOGY

Course code	Title of the paper	credit	Internal mark	External mark
HOME C-301	RESEARCH METHODOLOGY	04	20	80

Course out comes:

- Students can learn principles of research and types of research which helps them to report writing.
- Students can develop the ability to apply the methodology on research and project works.

Unit – I

- Research – Meaning, aims, principles and types of research.
- Methods of social science research- social survey, case study, experimental method, interdisciplinary approach and statistical methods.
- Research design – Meaning, need and features of a good design, types of research design, developing a research plan.

Unit-II

- Sampling design – meaning, steps and types of sampling, Characteristics of a good sampling design.
- Data collection – Meaning and types of data collection. Collection of Primary data – Observation method, interview method, questionnaires, schedule, difference between questionnaires and schedules.
- Collection of Secondary data – Caution using secondary data.
- Selection of appropriate method for data collection and research ethics

Unit-III

- Classification of data - Meaning, objectives and characteristics of an ideal classification. Types of classification – formation of discrete and continuous frequency distribution.
- Tabulation of data – Meaning, significance and parts of a table. General rules of tabulation, types of tables.
- Diagrammatical and graphical presentation of data- Significance, types and limitations of different types of diagrams and presentation of data.

Unit-IV

- Interpretation – Meaning, need, techniques and precaution in Interpretation.
- Report writing – Significance, types, steps, layout and types of the research reports.
- Bibliography writing – Meaning, need and types of bibliography writing.

HOME C-302 MENTAL HEALTH AND LIFE STYLE

Course code	Title of the paper	credit	Internal mark	External mark
HOME C-302	MENTAL HEALTH AND LIFESTYLE	04	20	80

Course out comes:

- To learn mental health and factors affecting mental health.
- To know the common mental health problems among children, adolescents and adults

Unit – I

- Mental Health –Meaning, definitions, significance in modern day scenario.
- Cultural and religious considerations affecting mental health of the people.
- Common Mental Health problems among Children-Attention Deficit Hyperactivity Disorder (ADHD); Adolescents (Depression, suicidal tendency); Adults (Stress related insomnia, Psychosomatic arthritis) and Elderly (Parkinson's disease).

Unit – II

- Schizophrenia– Meaning, definitions, symptoms, causes, diagnosis, prevention and treatment.
- Bipolar Disorder–Meaning, definitions, symptoms, causes, diagnosis, prevention and management.
- Paranoia- Meaning, definitions, symptoms, causes, diagnosis of abnormal reasoning, abnormal perceptual experiences.

Unit – III

- Neurological Disorder – Meaning, definitions, causes, classification of neurological disorders.
- Different Neurological Disorders – Alzheimer’s diseases, Diabetic Neuropathy, Fibromyalgia – Symptoms, causes, treatment and Prevention.
- Counseling to people suffering from different Neurological disorders.

Unit – IV

- Life Style Enrichment – Meaning, definitions and ways of enhancing life style.
- Food for Mental Health –Importance of balanced diet, antioxidants, water, fibers, fruits, nuts and herbs.
- Life Style Modifications – Meaning, definitions, its importance for maintaining good mental health. Role physical exercises, yoga and Pranayam for developing positive Mental Health.

HOME E-303 EXTENSION AND COMMUNICATION TECHNOLOGY

Course code	Title of the paper	credit	Internal mark	External mark
HOME E-303	EXTENSION AND COMMUNICATION TECHNOLOGY	04	20	80

Course out comes:

- To develop Extension communication in both formal and non-formal education
- To develop teaching and learning process through different techniques

Unit – I

- Extension Education: Concept, formal education, non-formal education, adult education, social education, Continuing education, Functional literacy.
- Adult Learning: Characteristics of adult learners, principles of adult learning, problems, and measures for its promotion, factors affecting adult learning.

Unit – II

- Teaching – concept, principles, maxims, communication approaches.
- Methods of Adult learning – Project method, problem solving method, lecture method, group discussion method.
- Motivation Techniques – Effective learning situation for adults.

Unit – III

- Communication System: Concept, models, barriers in communication and strategies to overcome the barriers.
- Communication Media: Print media (books, newspaper, magazines), Electronic media (radio, television, computer) and outdoor media (Exhibition, fairs, kiosks).
- Script Writing – Meaning, need, techniques and rules.
- Public Speaking – Meaning, need and rules.

Unit – IV

- Curriculum Development: Concept, functions, principles of curriculum construction, curriculum planning and its evaluation.
- Role of teacher in Curriculum planning.
- Lesson Plan – Concept, characteristics, Importance, prerequisites, types, construction of lesson plan.
- Teaching and Communication approaches which facilitates communication process

HOME E-304 COMMUNICATION IN RURAL DEVELOPMENT

Course code	Title of the paper	credit	Internal mark	External mark
HOME E-304	COMMUNICATION IN RURAL DEVELOPMENT	04	20	80

Course out comes:

- To gain useful information related to their problems and measure taken for the improvement to all segments of rural population
- Students learn about the Innovation and Adoption, develop leadership qualities through different training method provided by teacher, trainer etc.

Unit – I

Rural Development:

- Rural Sociology: Meaning, scope importance, characteristics.
- Problems of Rural India linked with Education, agriculture, Artisans, Economic and sociological factors (population explosion, child marriage, landless labourer, conservatism, migration etc).
- Measures taken for the improvement and welfare of rural population in India.

Unit – II

Innovation and Adoption:

- Innovation, Diffusion and Adoption – Concept, process and attributes of Innovation.
- Meaning and elements of Diffusion.
- Meaning of adoption, stages, and categories of adopters, characteristics and factors affecting adoption process.

Unit – III

Leadership and Administration:

- Leadership – Concept, types, principles, methods of identification of leadership qualities.
- Administration – Meaning, principles, increasing efficiency in administration.

Unit – IV

Trainer and Trainee Interface:

- Role of Trainer – Counsellor, facilitator, teacher, advisor, model expert.
- Competencies of Trainer – attitude, behavioral traits, Trainer-Trainee perception.
- Training Evaluation – Meaning, purpose, Significance, components, criteria, factors facilitating evaluation.

HOME E-305 EARLY CHILDHOOD CARE AND EDUCATION

Course code	Title of the paper	credit	Internal mark	External mark
HOME E-305	EARLY CHILDHOOD CARE AND EDUCATION	04	20	80
Course out comes:				
<ul style="list-style-type: none">➤ To gain knowledge related to the importance of early childhood care and their education➤ To learn the different method and practices use to develop early childhood care and their education which helps in socialization process				

Unit-I

- Early Childhood Years - Significance, of early childhood years; Universal needs and rights of young children; Status of children in India.
- Care of the Young Children - Importance of children's environment, concept of child rearing practices; dimensions of child rearing (feeding, weaning, toilet training, disciplinary techniques) psychological care, developing creativity among children.
- Impact of child rearing practices on children's personality development. Factors influencing child rearing practices.

Unit-II

- Early Childhood Education - Meaning, objectives and needs of preschool education.
- Contribution of Philosophers and Educationists towards Preschool Education - John Locke, Pestalozzi, Frobel, Dewey, Rousseau, Montessori.

- **Preschool Organizational Setup** - building, site location, plans for various types of preschools (urban, rural and tribal areas), space allotment for indoor and outdoor play areas.

Unit-III

- **Preschool Program Planning**- principles and planning of curriculum for preschool. Types of planning- daily, weekly, short-term and long-term planning.
- **Planning Activities for Preschools** - Information talk, storytelling, songs and music, dramatization, science experiences, creative activities, field trips, organizing functions and celebrations and parent-teacher meeting.
- **Play & Play Equipment's for children** -Values of Play; Types of Play in the Pre School; Play Materials and Equipment for Children; Low-Cost Play Equipment.

Unit – IV

- **Records and Registers** – significance, types, using and maintaining records.
- **Preschool Staff and Personnel** – qualification, qualities and selection of personnel.
- **Home School Relationship** - Importance and way of developing home School relations

HOME E-306

EXCEPTIONAL CHILDREN

Course code	Title of the paper	credit	Internal mark	External mark
HOME E-306	EXCEPTIONAL CHILDREN	04	20	80

Course out comes:

- To learn about the different types of health issues related to physical and mental health.
- To understand the different challenges faced by the Exceptional children.
- To aware about the programme and policies for Disabled children.

Unit-I

- Meaning, definitions and classifications of exceptional children.
- Children with Sensory Deficits- Deaf and dumb, visually impaired – definition, causes, teaching methods and rehabilitation.

Unit-II

- Mentally Challenged Children- Definition, causes, classification, education and rehabilitation.
- Gifted Children – Definition, Classification, Education methods used, Parental awareness and development competency in bringing up these children.

Unit-III

- Socially Handicapped Children- (Juvenile delinquents) definition causes, preventive measures taken, rehabilitation.
- Emotionally Disturbed children- Common behavioral problems of children, Psychosis (Schizophrenia and Autism in children), Neurosis (Phobia, Obsession and compulsion), Causes, symptoms, treatment and rehabilitation of each type.

Unit-IV

- Orthopedically Challenged Children – Definition, causes, treatment and rehabilitation.
- Children with speech defects – Aphasic child, stammering, stuttering, articulatory defects, remedial measures and speech therapy. Meaning, causes, symptoms, treatment and rehabilitation of each type.
- Welfare programmes and policies for disabled children and adolescents in India.

HOME E-307 FOOD SERVICE MANAGEMENT

Course code	Title of the paper	credit	Internal mark	External mark
HOME E-307	FOOD SERVICE MANAGEMENT	04	20	80

Course out comes:

- To learn the resource management in food service management.
- To get the idea how to management space, storage space, service area, selection of equipment.
- To develop the different management process such as food, financial and personnel management.

Unit I

- Food Service Management – Types of food services; principles and functions of catering management; planning, organizing, directing, coordinating, controlling and evaluating.
- Tools of Management – The organization chart and communication.
- Management of Resources – Money, space, materials, equipment, staff, time, energy, procedures.

Unit II

- Organization of Space – Kitchen space, work simplification, designing kitchen, Layout of kitchen, maintain ace of kitchen.
- Storage Space – location, types of storage, planning, layout, sanitation, safety and security of stores.
- Service Areas – Location, planning service areas, dimensions for service areas, décor of service and dining areas

Unit – III

- Equipments for Food Services – Classification of equipment: weight or size, order of use, mode of operation.
- Selection of equipment – Size and type of establishment, menu, usage, utility of design, price, ease of installation, maintenance and operation, safety, economy, ease of cleaning, attractiveness, source of supply.

Unit IV

- Food Management – Characteristics of food, food purchasing, Storage of food Menu planning, food production, food service.
- Financial Management – Definition and scope, cost control, pricing, book keeping and accounting.
- Personnel Management – Recruitment, selection and induction, employee facilities and benefits, training and development

HOME E-308 CLINICAL NUTRITION AND DEICTICS

Course code	Title of the paper	credit	Internal mark	External mark
HOME E-308	CLINICAL NUTRITION AND DEICTICS	04	20	80

Course out comes:

- To learn therapeutic diets for patients suffering from different diseases.
- To learn the role of dietitians and diet planning.

Unit I

- Diet Therapy – Glycemic index, dietary supplements, Adjuncts to Diet Therapy, Food, and nutrition and drug interaction.
- Therapeutic Diet – Routine hospital diet, nutrition support service, malnutrition in hospital patients, pre- and post-operative diets, immune-nutrition, nutrition support in burn patients.
- The Dietitian – Classification, roles and responsibilities, code of ethics, assessment and diet planning.

Unit II

- Diet in Gastrointestinal Diseases – Indigestion, Peptic ulcer, Carcinoma of the stomach, Gastric surgery, Constipation, Diarrhoea, Lactose intolerance, Irritable bowel syndrome, Intestinal gas and Flatulence.
- Diet in Cardiovascular Diseases – Prevalence, clinical effects, risk factors, role of fat in development of Atherosclerosis, dietary management, hypertension, hypercholesterolemia, physical activity and heart disease.
- Diet in Diseases of Liver and Pancreas - Functions of liver, agents responsible for liver damage, damaged caused by liver, infective hepatitis, cirrhosis of liver, hepatic encephalopathy, cholecystitis and cholelithiasis, pancreatitis.

Unit - III

- Diet in Diabetes Mellitus – Prevalence, types, etiological classification by WHO, etiology, symptoms, diagnosis, treatment, complications, gestational diabetes, alcohol and diabetes.
- Diet in Diseases of Kidneys – Functions of kidney, Glomerulo Nephritis, Nephrotic syndrome, acute renal failure, chronic renal failure, dialysis, Urolithiasis or urinary calculi.
- Dietary management in case of Febrile Diseases: Tuberculosis, Typhoid and Metabolic disorders like Gout Obesity and diabetes Mellitus.

Unit IV

- Diet in deficiency diseases of all vitamins and minerals specifically.
- Different types of Diets and their therapeutic effects - Bland, High Protein, High Calorie, low fat, low sodium, low fiber, solid, liquids and other types of Diets.
- Food sensitivity – Types of reactions, foods involved in sensitivity, symptoms, diagnosis, and treatment.

HSCT-300 FAMILY AND COMMUNITY HEALTH (CBCT)

Course code	Title of the paper	credit	Internal mark	External mark
HOME E-300	FAMILY AND COMMUNITY HEALTH	04	20	80

Course outcomes:

- . To learn by the students of different depts other than home science students.
- To learn the process and period of human development and its significance.

Unit – I

- Process and periods of Human Development–Nature and nurture interactions and its significance.
- Family Life Education – Meaning, significance, subject matter and target groups for Family Life Education.
- Family Life Enrichment – Meaning, need and aspects of family Life enrichment. Individual’s right to have a family; Family’s Rights and Responsibility with reference to its environment; scope of family life enrichment.

Unit – II

- Food Quality Assessment – Causes of spoilage. Safety and Care of Food Supply – Microbial hazards, Residue Pollutants, Natural toxicants in Foods, Food Poisoning.
- Food Additives – Flavoring agents, coloring agents, leavening agents, stabilizers, thickeners and their usages.
- Food Laws – Subjective and objective methods of measuring quality for food production.

Unit – III

- Management of Family Resources – Management of energy, fatigue, energy savings methods and devices (work simplifications).
- Management of Time – Meaning, principles, methods and devices used for time saving. Importance of quality time for family living.
- Management of Money - Meaning, types, functions of money, types of Income and supplementary family income.

Unit – IV

- Extension Education– Concept and features of extension education: Formal education, non-formal education, adult education.
- Objectives, Characteristics and Philosophy of Extension Education.
- Principles of Extension Education and qualities of Extension worker.

HOME VAC -310 YOGA AND HEALTH

Course Code	Title of the paper	Credit	Internal	External
HOME VAC - 310	YOGA AND HEALTH	Non credit		

Course Objective-

1. To enable the students to have good health.
2. To motivate the students to learn how to lead stress free life.
3. To Practice asanas and meditation.

Course out comes:

1. To obtain Physical & Mental fitness.
2. Inculcating creativity among the students
3. Developing positive & wholesome attitude towards life.

Unit-1

- Yoga and Mediation
- Pawanmuktasana part-I and II
- Pre-meditative and Meditative postures
- Sukhasana, Padamasana, Vajrasana

Unit-2

- Standing and bending asana,
- Forward bending asana
- Spinal Twisting Asanas, sarvangasana, dhanurasana ,Garudasana

Unit-3

- Surya namaskar with mantra and posture.

Unit-4

- Abdominal breathing and Yogic Breathing, Nadi Shodhana.
- Praayama- Bhramari,Sheetkali,Seetari, Ujjayi pranayama, , Bhastrika, jalaneti, Kunjal.

FOURTH SEMESTER

HOME C-401

CHILD STUDY AND FAMILY RELATION

Course code	Title of the paper	credit	Internal mark	External mark
HOME C - 401	CHILD STUDY AND FAMILYRELATION	04	20	80

Course out comes:

- To learn the importance of child study and their developmental process.
- To learn the different techniques used in child study.
- To learn the changing family relationship throughout the lifecycle,

Unit – I

- Child Study - Meaning, importance, scope, period and process of studying Child Development.
- Principles of Child Development and factors Influencing Child's Overall Growth and Development.
- Major Theoretical Perspectives in Understanding Child Development- Piaget's cognitive theory, Erickson's psychosocial development, Freud's psychoanalytic theory and Bronfenbrenner's Ecological theory.

Unit – II

- Techniques of Studying Children - Approaches to child study (longitudinal and cross-sectional); different methods of child study (Case study, observational technique, structured tests & scales, Self-report methods, projective and other indirect methods).
- Common Psychometric Tests –Intelligent Tests (verbal and non-verbal), Aptitude test, Projective tests (TAT and CAT), Personality tests.

Unit – III

- Family Relationships–Meaning and significance of family relationship in traditional days and in contemporary societies.
- Basic Elements of Family Relations - Family communication, Role performance within family, family interactions, family adaptability, family cohesion, family homeostasis, family boundaries.
- Types of Family Relationships–Couple relationship, Parent-Child Relationship (Fathering and Mothering), Sibling Relationships, In-law Relationships, Relationship with extended family members and Grandparents and grandchildren's Relationships.

Unit-IV

- Family Relations and Child's Development– Contribution of positive family relationship (father & mother) in healthy personality development of children and adolescents.
- Family Life Cycle – Meaning, importance, stages and problems associated with it.
- Changes and Challenges of Family Relationships in Contemporary Society –Role of Media, women's education and employment.

HOME C-402 NUTRITION THROUGH LIFE CYCLE

Course code	Title of the paper	credit	Internal mark	External mark
HOME C - 402	NUTRITION THROUGH LIFE CYCLE	04	20	80

Course out comes:

- To learn the nutritional need for the different stages of life.
- To gain knowledge about the nutritional need during different stages of life.

Unit – I

Nutrition during Infancy:

- Changing feeding patterns, solid foods, feeding problems, nutritional issues
- Nutritional assessment, requirements.
- Growth and development, Nutrition for low-birth-weight infant.

Unit – II

Nutrition for Children and adolescents:

- Adolescent growth, development and changes, nutritional requirement
- Nutritional status and diet for children and adolescent
- Current nutrition issues, Diet for Athletes.

Unit – III

Nutrition for adult and elderly:

- Nutritional requirement and Nutritional assessment for adult and elderly
- Physiologic and biochemical changes during old age.
- Dietary management and dietary counselling for adult and elderly.

Unit - IV

Nutrition during Pregnancy and Lactation:

- Diet during pregnancy, Physiologic and biological changes in pregnancy, factors influencing outcome of pregnancy
- Prenatal nutrition, nutrition and brain development
- Nutritional requirement during lactation, dietary counselling

HOME C403 POPULATION STUDIES AND CONSUMER EDUCATION

Course code	Title of the paper	credit	Internal mark	External mark
HOME C - 403	POPULATION STUDIES AND CONSUMER EDUCATION	04	20	80

Course out comes:

- To learn the demography, fertility, structure and need for study of population structure
- To learn the consumer behavior, Laws protecting Consumer and Consumer Awareness programme .

Unit – I

- Demography –Meaning, demographic cycle, demographic indicators-population statistics (population size, sex ratio (sex ratio at birth and child sex ratio of 0-6 years), density, dependency ratio.), vital statistics (birth rate, death rate and growth rate).
- Fertility – Meaning, factors affecting fertility among the population (age at marriage, duration of married life, spacing of children, education, economic status, caste and religion, nutrition, family planning, other factors).
- Need for study of Population Structure, characteristics of population structure (Age and Sex).
- Factors influencing sex ratio – Age structure, marital status, religion, literacy and population.

Unit – II

- Population distribution–Basic concepts, measures and factors affecting population distribution.
- Family Planning–Definition, scope, health aspects of family planning (women’s health, fetal health and child health), Contraceptive methods, Barrier methods, Intra-uterine devices. National family welfare Programs.
- Population Education – Concept, need, objectives, scope of population education, causes of growth in India.

Unit – III

- Introduction to Consumer Behavior – Who is a consumer? Defining consumer behavior; Nature and scope of consumer behavior; Characteristics of Indian Consumers; Consumer decision making.
- Changing Patterns of Consumer Behavior – Demographic trends; Technological trends; Implications of technological trends on consumer behavior; Trends in Public Policy.
- Environmental Determinants of Consumer Behavior–Influence of Culture; Group influence on consumption; Family Buying decisions.

Unit – IV

- Consumer Awareness and Education - Consumer Rights and Welfare. Problems faced by the Indian Consumer.
- Laws protecting Consumer – Consumer Protection Act, 1986;
- Role of consumer society in protecting consumer; Consumer Forum and Consumer Redressal Cell, Consumer Movement in India.

HOME E-404 EXTENSION TRAINING AND ADMINISTRATION

Course code	Title of the paper	credit	Internal mark	External mark
HOME C - 404	EXTENSION TRAINING AND ADMINISTRATION	04	20	80

Course out comes:

- To learn training and development programme in administration.
- To learn the Training evaluation methods by use of technology.

Unit – I

- Training and Development – Nature, importance and process of training and development.
- Training Programmes – Advantages and Impediments to effective training.
- Inputs in Training and Development; Methods of Training.

Unit – II

- Trainer and Trainee Interface - Role of Trainer: Emerging trainer role, skill requirements, Trainee Like Qualities (TLQ), Trainee Unlike Qualities (TUQ).
- Characteristics of a good trainer - Attitude, behavioral traits, Trainer-Trainee perception.

Unit – III

- Training Evaluation–Meaning, purpose, Significance, components, criteria, factors facilitating evaluation.
- Training of the Trainers on development issues
- Use of technology in training

Unit - IV

Leadership and Administration:

- Leadership – Concept, types, principles, methods of identification of leadership qualities.
- Administration – Meaning, principles, increasing efficiency in administration.
- Supervision: field supervisor and laboratory supervision

HOME E-405 DISSERTATION/ INTERNSHIP

Course code	DISSERTATION / INTERNSHIP (Extension education)	
HOME E-405	Credit-4 Full mark-100	Dissertation (80 marks) Viva (20 marks) equally examined by both internal and external

Course outcome: -.

- **To develop the ability to analyze the health systems in the community level.**
- **To design, write and develop skill to prepare their project**

- i. Field visit to NGO, Anganwadi, Community Centers etc.;
- ii. Students will have to prepare a Dissertation on any area of their choice from the specialpapers. basing on fieldwork (primary)/ secondary data

HOME E- 406 THEORIES OF CHILD DEVELOPMENT

Course code	Title of the paper	credit	Internal mark	External mark
HOME C - 406	THEORIES OF CHILD DEVELOPMENT	04	20	80

Course out comes:

- To learn the developmental theory developed by different theorist in humandevelopment process
- Students gain knowledge of Cognitive Development, Psychoanalytic theory, sociallearning theory etc

Unit – I

- Students will have to prepare a Dissertation on any area of their choice from the specialpapers. basing on fieldwork (primary)/ secondary data
- Meaning, types and functions of theory. Theoretical perspectives biological, environmental, interactional, cultural context of child development.
- Psychoanalytic theory of Freud – Meaning, stages and critical analysis.
- Erickson’s theory of Psycho-social development – Meaning, stages and critical analysis.

Unit – II

- Cognitive Development theory of Jean Piaget – Meaning, stages and critical analysis
- Cognitive theory of Vygotsky’s – Meaning, stages and critical analysis.
- Ecological theory of Human Development by Bronfenbrenner - Meaning, stages and critical analysis.

Unit – III

- Field theory of Kurt Lewin - Meaning, stages and critical analysis.
- Attachment theory of Bowlby - Meaning, stages and critical analysis.
- Language theory of Chomsky - Meaning, stages and critical analysis.

Unit – IV

- Need theory of Abraham Maslow - Meaning, stages and critical analysis.
- Social learning theory of Bandura and Skinner - Meaning, stages and critical analysis.
- Kohlberg's theory of Moral development - Meaning, stages and critical analysis.

HOME E- 407

DISSERTATION/ INTERNSHIP

Subject code	DISSERTATION / INTERNSHIP (Human Development)	
HOME E-407	Credit-4 Full mark- 100	Dissertation (80 marks) Viva (20 marks) equally examined by both internal and external
Course outcome: -. <ul style="list-style-type: none">➤ Students visit the different health care center, understand and prepare the internship report, prepare dissertation which can boost their moral value and depth knowledge		

Detailed Syllabus

- Internship - Students will be attached to a Child Care Centre (Anganwadi/Preschool/Play School) / Special School / Old Age Home / Child or Juvenile Home for one week for training.
- Students will have to prepare a Dissertation on any area of their choice from the special papers. basing on fieldwork (primary)/ secondary data

HOME E 408 FOOD SCIENCE

Course code	Title of the paper	credit	Internal mark	External mark
HOME C - 408	FOOD SCIENCE	04	20	80

Course out comes:

- To Learn the nutritional biochemistry
- To learn the analysis of food quality assessment through different test

Unit – I

- Food Science – Important physical phenomena influencing the reaction of living matter: i) surface tension, ii) colloidal states iii) permeability iv) Osmotic pressure v) Hydrogenation concentration.
- Carbohydrates – Asymmetric carbon atoms and optical isomerism-cyclic structure of sugar and Haworth Formulation-Monosaccharide of biological importance; Disaccharides, Polysaccharides structure, analogy-Phosphoric esters of sugar compound, carbohydrates. Glycosides –peptic compounds metabolism of carbohydrates.

Unit – II

- Proteins – Classifications of amino acid. Individual structure-Peptide bond evidence for peptide linkage-Architecture of Protein-Electrolytes. PH Buffers-amino acids and protein chemistry of nucleo-proteins-nucleic acid, nucleotides, vitamins, chemistry, food sources, requirements. Effect of deficiency and over vitaminosis.
- Lipids-Forms of Lipids in nature, Phospholipids-lecithin, cephalin, sphingomyline, glycolipids, cerebrosides, glycolipids of High molecular weight, stero and bile acids-Lipo Proteins-Metabolism of Lipids.

Unit – III

- Food quality assessment – causes of food spoilage, psychrophile, mesophile, Thermophiles organisms and their role in food spoilage
- Food processing-:
 - Introduction of food processing
 - Methods of food processing
 - Processing of some of the important food items & effect of processing on fruits and vegetables

Unit – IV

- Food analysis and biochemistry of different types of foods of major food groups.
- Measurement of food palatability, acceptance, food testing, objectives. Testing density, volume, tenderness, viscosity-weight, moisture etc.

HOME E-409 DISSERTATION / INTERNSHIP

Course code	DISSERTATION / INTERNSHIP (Food and Nutrition)	
HOME E-409	Credit-4 Full mark-100	Dissertation (80 marks) Viva (20 marks) equally examined by both internal and external
Course outcome: -. <ul style="list-style-type: none">➤ Students visit the different health care center, understand and prepare the internship report, prepare dissertation which can boost their moral value and depth knowledge		

- Internship – Students will be attached to a clinic/hospital/catering center/food processing unit/hotel etc.; for two weeks for training and submit the report within 10 pages.
- Students will have to prepare a Dissertation on any area of their choice from the special papers. basing on fieldwork (primary)/ secondary data

HOME AC -410 CULTURAL HERITAGE OF SOUTH ODISHA

Text and Reference Book List

1. Normal and Therapeutic Nutrition – Corinne Hogden Robinson, Marilyn R. Lawler
2. Essentials of Food and Nutrition, M Swaminathan, Ganesh Publications Pvt Ltd.
3. Food Facts and Principles – N. Shakuntala O. Manay, New Age International,
4. Nutrition Science – B. Srilaxmi., Google Books,
5. Food Science – B. Srilaxmi. Google Books,
6. Dietetics – B. Srilaxmi. Google Books,

7. Text Book of Preventive and Social Medicine- .K.Park and J.E. Park.
8. Nutritive Value of Indian Foods – C. Gopalan.
9. Home Management – Educational Planning Group.
10. Text Book of Household Arts – Stella Soundaraj , Orient Longman
11. Principles of Management – P.C. Tripathi and P.N.Readdy, Tata McGraw Hill.
12. Management in Family Living – Nickell Dorsey. Abe Books.
13. Principles and Practice Of Management, V.S .P. Rao and P.S. Narayana, Published by Konark Publishers Pvt Ltd
14. Human Development – Diane E. Papalia. Mc Graw Hill Publication.
15. Developmental Psychology – E.B Hurlock, Google Books
16. Text Book on Child Development and Family Studies – A. Chowdhury, AcademicExcellence, New Delhi.
17. Child Development –Thomas J. Berndt ,Brown & Benchmark Publishers, 1997
18. Life-Span Development John W. Santrock McGraw Hill Publication.
19. Human Development – Across the Span –, J.S.Dacey and J.F. Travers. Brown & Benchmark.
20. Child and Adolescent Development – Anita Woolfolk and Nancy E. Perry.
21. The Development of Children – Michael Cole and Sheila R. Cole- Scientific AmericanBooks.
22. Child Rearing Practices in India: H. Samantaraya ,Sara Publications, New Delhi
23. Pre-School Children – Development, Care and Education – A. Chowdhury, New AgeInternational Ltd.
24. Exceptional Children: Their psychology and Education – Chintamani Kar. SterlingPublishers PVT Ltd.

25. Developmental Psychology – Howard Gardner, Harvard University Press
26. Children with Exceptional Needs- Lilly Stephen. HottaRinchar.
27. Abnormal psychology – Sharnmugam, Tata, McGraw Hill.
28. Exceptional Children – Udy Shankar. Sterling Publishers.
29. Exceptional Children –William L. Heward and Michael D. Orlansky, MacMillan,
30. Education of Exceptional Children – M. Dash, Atlantic Publishers & Distributors.
31. Counseling and Guidance – S. Narayan Rao. McGraw Hill.
32. Guidance and Career Counseling – A.K. Nayak and V.R. Rao.
Watermark Theme, poweredby Blogger
33. Introduction to Counseling and Guidance – Robert L. Gibson and MarianneH.Mitchell. Prentice- Hall of India.
34. Education, Communications for Development – O.P. Dhama and O.P. Bhatnagar, Oxford & IBH Publications.
35. Extension Education in Community Development – Directorate of Extension, Government of India.
36. Extension, Communication and Management – G.L. Ray. Kalyani Publisher New Delhi.
37. Extension Education – A.A.Reddy, Srilaxmi Press, Delhi
38. An Introduction to Extension Education – S.V.Supe. Oxford & IBH Pub.
39. Process of Communication- B.K. Berlo.
40. Community Organist ion: Theory and Principles- M.G.Ross.
41. State and society in India – A.R Desai, Popular Prakasahan Bombay
42. Fundamentals of Teaching Home Science- Candra and Shaha.
43. Text Book of Mass Communication and Media – Uma Joshi.
44. Extension Programme Planning – A.S. Sandhu. Oxford & IBH.

45. Human Development – Across the Span –, J.S.Dacey and J.F. Travers. Brown & Benchmark.
46. Child and Adolescent Development – Anita Woolfolk and Nancy E. Perry.
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58. Guidance and Career Counseling – A.K. Nayak and V.R. Rao. Watermark Theme, powered by Blogger
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69. Text Book of Mass Communication and Media – Uma Joshi.
70. Extension Programme Planning – A.S. Sandhu. Oxford & IBH.
71. Text Book of Extension Education – R.Singh. SKP, Ludhiana.
72. A Hand Book of Extension Education – B.K. Chaubey, J.P.Allahabad.
73. Evaluation, Management in Training and Development – Virmani and Seth
74. Communication for Social Change: Context, Social Movements,
Pradip Ninan Thomas ,Sage Publications Pvt Ltd.
75. Social Problems and Social Disorganization –
C.B.Memoria,<https://www.sociologylearners.com/social-disorganization>
76. Practical counseling and helping skills – Nelson-jones, R., Sage Publications.
77. Textbook of Home Science Extension Education – Shekhar,
Serene (Gote) and Ahlawat Santosh. H.B. Daya
78. Introduction to Family Resource Management – P.
Seetharaman,[https:// www.amazon.com/Introduction-Family-Resource-Management-2015/dp...](https://www.amazon.com/Introduction-Family-Resource-Management-2015/dp...)
79. Home Science – Work Simplification Methods (With Diagram)

Article shared by : Suhani Advertisements, Amazon

80. Popular Master Objective Home Science- R. Gupta.[https:// www.itsnet.in/books/home-science-\(ref.for-ugcnetjrf.\)-by-yadla...](https://www.itsnet.in/books/home-science-(ref.for-ugcnetjrf.)-by-yadla...)
81. UGC NET/SLET Home Science Paper II- Sokhi
82. Home Management: Plain and Simple, Paperback - Kim Brenneman, Amazon
83. 100 Days of Blessing - Volume 1: Devotions for Wives and Mothers
2nd Edition, by Nancy Campbell, Amazon
84. MLA Handbook for writers of Research papers -Gibaldi Joseph,
Affiliated East-West Press, New Delhi
85. Ethnographic Research: A guide to general conduct-Allen, R.R, Academic
Press, London
86. Interviewing Strategy, Technique and Tactics -Gorden, R.L., Homewood,
Illinois
87. Research Methodology: Methods and Techniques – C.R. Kothari.
New Age international Publishers.
88. Methodology of Educational Research – Lokesh Kaul. Vikas Publishing
House.
89. Methods of Social Survey and Research – S.R. Bajpayee. Amazon.
90. Fundamentals of Statistics – D.N. Elhance and Veena Elhance.
91. Writing Research Reports-Runeson, G and Skitmore,
M, Anmol Publications Pvt Ltd
92. Human Development – Across the Span –, J.S.Dacey and J.F.
Travers. Brown & Benchmark.
93. Child and Adolescent Development – Anita Woolfolk and Nancy E. Perry.
94. The Development of Children – Michael Cole and Sheila R.
Cole- Scientific American Books.
95. Child Rearing Practices in India: H. Samantaraya ,Sara Publications, New

Delhi

96. Pre-School Children – Development, Care and Education – A. Chowdhury, New Age International Ltd.
97. Exceptional Children: Their psychology and Education – Chintamani Kar. Sterling Publishers PVT Ltd.
98. Developmental Psychology – Howard Gardner, Harvard University Press
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102. Exceptional Children – William L. Heward and Michael D. Orlansky, MacMillan,
103. Education of Exceptional Children – M. Dash, Atlantic Publishers & Distributors.
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105. Guidance and Career Counseling – A.K. Nayak and V.R. Rao.
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107. Education, Communications for Development – O.P. Dhama and O.P. Bhatnagar, Oxford & IBH Publications.
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110. Extension Education – A.A.Reddy, Srilaxmi Press, Delhi
111. An Introduction to Extension Education – S.V.Supe. Oxford & IBH Pub.
112. Process of Communication- B.K. Berlo.

113. Community Organist ion: Theory and Principles- M.G.Ross.
114. State and society in India – A.R Desai, Popular Prakasahan Bombay
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116. Text Book of Mass Communication and Media – Uma Joshi.
117. Extension Programme Planning – A.S. Sandhu. Oxford & IBH.
118. Text Book of Extension Education – R.Singh. SKP, Ludhiana.
119. A Hand Book of Extension Education – B.K. Chaubey, J.P.Allahabad.
120. Evaluation, Management in Training and Development – Virmani and Seth
121. Communication for Social Change: Context, Social Movements,
Pradip Ninan Thomas ,Sage Publications Pvt Ltd.
122. Social Problems and Social Disorganization –
C.B.Memoria,<https://www.sociologylearners.com/social-disorganization>
123. Practical counseling and helping skills – Nelson-jones, R., Sage
Publications.
124. Textbook of Home Science Extension Education – Shekhar,
Serene (Gote) and AhlawatSantosh. H.B. Daya
125. Introduction to Family Resource Management – P.
Seetharaman,[https:// www.amazon.com/Introduction-Family-Resource-Management-2015/dp...](https://www.amazon.com/Introduction-Family-Resource-Management-2015/dp...)
126. Home Science – Work Simplification Methods (With Diagram)
Article shared by : Suhani Advertisements, Amazon
127. Popular Master Objective Home Science- R. Gupta.[https://
www.isnet.in/books/home-science-\(ref.for-ugcnetjrf.\)-by-yadla...](https://www.isnet.in/books/home-science-(ref.for-ugcnetjrf.)-by-yadla...)
128. UGC NET/SLET Home Science Paper II- Sokhi
129. Home Management: Plain and Simple, Paperback - Kim Brenneman,
Amazon

130. 100 Days of Blessing - Volume 1: Devotions for Wives and Mothers
2nd Edition, by Nancy Campbell, Amazon
131. MLA Handbook for writers of Research papers -Gibaldi Joseph,
Affiliated East-West Press, New Delhi
132. Ethnographic Research: A guide to general conduct-Allen, R.R, Academic
Press, London
133. Interviewing Strategy, Technique and Tactics -Gorden, R.L., Homewood,
Illinois
134. Research Methodology: Methods and Techniques – C.R. Kothari.
New Age international Publishers.
135. Methodology of Educational Research – Lokesh Kaul. Vikas Publishing
House.
136. Methods of Social Survey and Research – S.R. Bajpayee. Amazon.
137. Fundamentals of Statistics – D.N. Elhance and Veena Elhance.
Writing Research Reports-Runeson, G and Skitmore, M, Anmol Publications Pvt
Ltd.

ପାଠ୍ୟକ୍ରମ (SYLLABUS)

ସ୍ନାତକୋତ୍ତର ଓଡ଼ିଆ ପାଠ୍ୟକ୍ରମ
ସ୍ନାତକୋତ୍ତର ଓଡ଼ିଆ ବିଭାଗ
ଇଚ୍ଛାଭିତ୍ତିକ ସମ୍ମାନ ପଦ୍ଧତି ସ୍ଥାନାନ୍ତରଣ
(Choice Based Credit Transfer)

୨୦୨୩-୨୦୨୪



ବ୍ରହ୍ମପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ
ଉତ୍ତର ବିଭାଗ
ବ୍ରହ୍ମପୁର - ୭୬୦୦୦୭, ଗଞ୍ଜାମ, ଓଡ଼ିଶା

ABSTRACT OF THE SYLLABUS UNDER CBCT PATTERN FOR M.A. ODIA COURSES, B.U

Semester - I

	No. of Credit	Marks 100 (80 End Semester + 20 Internal Assessments)
ODIA C 101	4	ଭାରତୀୟ ସାହିତ୍ୟ (Bharatiya Sahitya)
ODIA C 102	4	ଭାରତୀୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ (Bharatiya Sahitya Tatwa)
ODIA C 103	4	ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ (Paschayatya Sahitya Tatwa)
ODIA C 104	4	ଭାଷାବିଜ୍ଞାନ (BhasaBigyana)
ODIA C 105	4	ପ୍ରାଚୀନ ଓଡ଼ିଆ ସାହିତ୍ୟ: ପୁରାଣ ଓ ଗଦ୍ୟ (Prachina OdiaSahitya: Purana O Gadya)
Semester – II		
ODIA C 201	4	ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟର ଆଦ୍ୟପର୍ବ-୧୯୪୭ ପର୍ଯ୍ୟନ୍ତ (Adhunika Odia sahyara Adyaparba- upto 1947) (ଉପନ୍ୟାସ, କ୍ଷୁଦ୍ରଗଳ୍ପ, କାବ୍ୟ, କବିତା, ପ୍ରବନ୍ଧ)
ODIA C 202	4	ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ: କାବ୍ୟ ଓ ଗଦ୍ୟ (Madhyajugiya OdiaSahitya: Kabya O Gadya)
ODIA C 203	4	ଓଡ଼ିଆ ଲୋକ ସାହିତ୍ୟ (Odia LokaSahitya)
ODIA C 204	4	ଓଡ଼ିଆ ଭାଷା ତତ୍ତ୍ୱ(Odia Bhasatatwa)
ODIA C 205	4	ଅଭିଧାନ ବିଜ୍ଞାନ(Abhidhan Bigyana)
ODIA VAC 206	NON CREDIT	ସୃଜନଶୀଳ ସାହିତ୍ୟ (CREATIVE WRITINGS) NON CREDIT VALUE ADDED COURSE
Semester – III		
ODIA D 301 (Project and Dissertation)	4	ପାଠକ୍ରମ ଓ ନିବନ୍ଧ ପ୍ରସ୍ତୁତି (Seminar Presentation and Preparation of Dissertation)
ODIA C 302	4	ଆଦିବାସୀ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତି (Adibasi Sahitya O Sanskruti)
ODIA E 303 (Group-A)	4	A student is allowed to opt. for any one group from following 3 groups. ଛାତ୍ରଟିଏ ତୃତୀୟ ସେମିଷ୍ଟରରେ ଯେଉଁ Groupରୁ ସ୍ୱତନ୍ତ୍ର ପତ୍ର ନେଇଥିବ ତତ୍ତ୍ୱେ ସେମିଷ୍ଟରରେ ତାହାକୁ ସେହି ନିର୍ଦ୍ଦିଷ୍ଟ Groupରୁ ସ୍ୱତନ୍ତ୍ରପତ୍ର ନେବାକୁ ହେବ । Group-A :ଲୋକ ସାହିତ୍ୟ(Loka Sahitya)ODIA E 303 & ODIA E 304 Group-B :ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ(Madhyajugiya Sahitya) ODIA E 305 & ODIA 306 Group-C :ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti Odia Sahitya) ODIA E 307 & ODIA 308
ODIA E 304 (Group-A)	4	
ODIA E 305 (Group-B)	4	
ODIA E 306 (Group-B)	4	
ODIA E 307 (Group-C)	4	
ODIA E 308 (Group-C)	4	
ODIA CT 300	4	ଓଡ଼ିଆ ସାହିତ୍ୟ ଚର୍ଚ୍ଚା (Odia Sahitya Charchaa)
ODIA VAC 309	NON CREDIT	ଓଡ଼ିଆ ସାହିତ୍ୟ ସମୀକ୍ଷା ଧାରା (Odia Sahitya Sameekshya Dharaa) NON CREDIT VALUE ADDED COURSE
Semester – IV		
ODIA C 401	4	ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ ବିକାଶ ପର୍ବ (Adhunika Odia Sahitya Bikash Parba)
ODIA C 402	4	ଭାରତୀୟ ସାହିତ୍ୟର ତୁଳନାତ୍ମକ ଅଧ୍ୟୟନ, ଅନୁବାଦ ଓ ସମ୍ପାଦନା କଳା(Bharatiya Sahityara Tulanatmaka Adhyayana,Anubaada O Sampaadanaa Kala)
ODIA C 403	4	ଓଡ଼ିଶାର ପ୍ରଦର୍ଶନଶୀଳ କଳା (Odishara Pradarshanshila kala)

ODIA E 404(Group-A)	4	A student is allowed to opt. for any one group from following 3 groups. ଛାତ୍ରଟିଏ ତୃତୀୟ ସେମିଷ୍ଟରରେ ଯେଉଁ Groupରୁ ସ୍ୱତନ୍ତ୍ର ପତ୍ର ନେଇଥିବ ତତୁପ୍ରାୟ ସେମିଷ୍ଟରରେ ତାହାକୁ ସେହି ନିର୍ଦ୍ଦିଷ୍ଟ Groupରୁ ସ୍ୱତନ୍ତ୍ର ପତ୍ର ନେବାକୁ ହେବ । Group-A :ଲୋକ ସାହିତ୍ୟ(Loka Sahitya)ODIA E 404 & ODIA E 405 Group-B :ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ(Madhyajugiya Sahitya) ODIA E 406 & ODIA 407 Group-C :ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti Odia Sahitya) ODIA E 408 & ODIA 409
ODIA E 405(Group-A)	4	
ODIA E 406 (Group-B)	4	
ODIA E 407 (Group-B)	4	
ODIA E 408 (Group-C)	4	
ODIA E 409 (Group-C)	4	
ODIA AC 410	NON CREDIT	ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ବିଭବ (Cultural Heritage of South Odisha) NON CREDIT ADD-ON-COURSE

1 st Semester	5 Papers	20 Credit	500 Marks
2 nd Semester	5 Papers	20 Credit	500 Marks
3 rd Semester	5 Papers	20 Credit	500 Marks
4 th Semester	5 Papers	20 Credit	500 Marks

TOTAL: 80 Credit TOTAL: 2000 Marks

ପାଠ୍ୟକ୍ରମର ଆଭିମୁଖ୍ୟ

Aim of the Program

- ଭାରତୀୟ ଭାଷା ସାହିତ୍ୟ ସହିତ ଓଡ଼ିଆଭାଷା ସାହିତ୍ୟର ବିବିଧ ବିଷୟରେ ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ଗୁଣାତ୍ମକ ଶିକ୍ଷା ପ୍ରଦାନକରି ଏହାକୁ ବିଶ୍ୱସାହିତ୍ୟ ସହିତ ପରିଚିତ କରାଇବା ପ୍ରସ୍ତୁତ ପାଠ୍ୟକ୍ରମର ମୌଳିକ ଲକ୍ଷ୍ୟ(Aim) ଅଟେ ।
- ବୌଦ୍ଧିକ ଜ୍ଞାନ ଓ ଉଚ୍ଚତ ଚିନ୍ତାଚେତନାକୁ ଉତ୍ତ୍ୱଳିତ କରି ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ଜୀବନଜୀବିକା ମାର୍ଗ ପ୍ରଦର୍ଶନ କରାଇବା ଏହାର ଉଦ୍ଦେଶ୍ୟ ।
- ବିଦ୍ୟାର୍ଥୀମାନଙ୍କର ଲିଖନକଳାର ବିକାଶ, ବ୍ୟବହାରିକ ଓ ବ୍ୟାକରଣ ଜ୍ଞାନର ବିକାଶ ଦିଗରେ ଏହା ସହାୟକ ହେବ ।
- ପ୍ରାଚୀନ ଓ ସାଂପ୍ରତିକ କାଳରେ ରଚିତ ହେଉଥିବା ସାହିତ୍ୟ ମଧ୍ୟରେ ପ୍ରଭେଦ ଜାଣିବା ପାଇଁ ସଂସ୍କୃତ, ପାଳି, ପ୍ରାକୃତ ଓ ଅପଭ୍ରଂଶ ସାହିତ୍ୟ ଅଧ୍ୟୟନ ଉପରେ ପ୍ରାଧାନ୍ୟ ଦିଆଯାଇଛି ।
- ଏହି ପାଠ୍ୟକ୍ରମ ଦ୍ୱାରା ଭାରତୀୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ ସମ୍ବନ୍ଧରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ସ୍ଥୂଳଧାରଣା ପାଇପାରିବେ ।
- ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ କ୍ଷେତ୍ରରେ ସୁଖ୍ୟାତି ଅର୍ଜନ କରିଥିବା ପ୍ଲାଟୋ, ଆରିଷ୍ଟୋଟଲ ଆଦି ଯୋଗଜନ୍ମାଙ୍କର ମହନୀୟତା ବଳରେ କଳା ସୃଷ୍ଟିରେ ପ୍ରକୃତିର ଭୂମିକା ଓ କଳାଦୃତରୂପ, ଦାର୍ଶନିକ ଅନୁଚିନ୍ତା ସମ୍ବନ୍ଧରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ଜ୍ଞାନ ଆହରଣ କରିପାରିବେ ।
- ଭାଷା ସମ୍ପର୍କିତ ନିୟମ ଭିତ୍ତିକ ଓ ତାତ୍ତ୍ୱିକ ଜ୍ଞାନସହିତ ବାଚିକ ଭାଷାର ଅଧ୍ୟୟନ ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀ ଅବଗତ ହେବେ ।
- ପ୍ରାଚୀନ ପୁରାଣ, ଗଦ୍ୟ ସାହିତ୍ୟରେ ସାଂସ୍କୃତିକ ଓ ଧାର୍ମିକ ଆବେଦନ, ଆଧ୍ୟାତ୍ମିକ ପରମ୍ପରା ଓ ରୀତିନୀତି କିପରି ପ୍ରତିଫଳିତ ହୋଇଛି, ଏହା ବିଦ୍ୟାର୍ଥୀମାନେ ଜାଣିବାକୁ ପାଇବେ ।
- ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ରୂପାୟିତ ହୋଇଥିବା ବହୁମୁଖୀନତାକୁ ଛାତ୍ରଛାତ୍ରୀମାନେ ଜାଣିବେ ।
- ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ ଅଧ୍ୟୟନ ଫଳରେ ସେକାଳ ସାହିତ୍ୟ ରଚନାରେ ରହିଥିବା ଚମତ୍କାରିତା, ଆଲଙ୍କାରିକତା ,ବର୍ଣ୍ଣନାଚାତୁରୀ, ଛନ୍ଦବିନ୍ୟାସ, ଶବ୍ଦପାଣ୍ଡିତ୍ୟ ଓ ଅଳଙ୍କାର ସଂଯୋଜନା ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀ ଜ୍ଞାନଲାଭ କରିପାରିବେ ।
- ଲୋକ ସାହିତ୍ୟ ଅଧ୍ୟୟନ ଫଳରେ ସଂସ୍କୃତ ଗବେଷଣାର ବୈଜ୍ଞାନିକ ଅନୁଶୀଳନ, ଲୋକମାନସ ସିଦ୍ଧାନ୍ତ, ଐତିହାସିକ ବିଚାର, ତତ୍ତ୍ୱ, ପ୍ରକାର୍ଯ୍ୟ, ସଂରଚନା ବିଷୟରେ ଛାତ୍ରମାନେ ଜ୍ଞାନ ଲାଭ କରିପାରିବେ ।
- ସମ୍ପ୍ରତି ପ୍ରଶାସନ, ଆଇନ, ବାଣିଜ୍ୟ, ବ୍ୟବସାୟ, ରାଜନୀତି, ଶିକ୍ଷା, ଗ୍ରାମ, ସହରାଞ୍ଚଳ କଚେରି ଆଦି କ୍ଷେତ୍ରରେ ବ୍ୟବହୃତ ହେଉଥିବା ନୂଆନୂଆ ଶବ୍ଦର ଅର୍ଥ ତା'ର ବ୍ୟବହାର, ଇତିହାସ ଓ ଶୁଦ୍ଧାଶୁଦ୍ଧ ନିର୍ଣ୍ଣୟ ସମ୍ବନ୍ଧରେ ବିଦ୍ୟାର୍ଥୀମାନେ ଧାରଣା ପାଇପାରିବେ ।

- ଆଦିବାସୀ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ବିକାଶ ମୂଳରେ ହିଁ ନିହିତ ରହିଛି ମହନୀୟ ଉତ୍କଳୀୟ ସଂସ୍କୃତିର ବିକାଶ । ତେଣୁ ଆଦିବାସୀ ସଂସ୍କୃତି ଓ ସାମାଜିକ ବିବର୍ତ୍ତନ ସମ୍ପର୍କରେ ସେମାନେ ଜ୍ଞାନ ଆହରଣ ପାଇପାରିବେ ।
- ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ପୌରାଣିକ, କାଳ୍ପନିକ କାବ୍ୟମାନଙ୍କର ଆଦର୍ଶାବଳୀର ଅନୁଶୀଳନ, ସହିତ ମୁସଲମାନ, ମରହଟ୍ଟା ଶାସନର ଛିତି ସମ୍ପର୍କରେ ସେମାନେ ଜ୍ଞାନ ଲାଭ କରିପାରିବେ ।
- ଲେଖକମାନଙ୍କର ଭ୍ରମଶକ୍ତି ଅନୁଭବ ଓ ଅନୁଭୂତି ସହିତ ଭୌଗୋଳିକ ଏବଂ ଐତିହାସିକ କିମ୍ବଦନ୍ତୀ ସମ୍ପର୍କରେ ସେମାନେ ଧାରଣା ପାଇପାରିବେ ।
- ଅଭିଧାନ ପ୍ରସ୍ତୁତି ସମ୍ପ୍ରତି ଭାଷା ସାହିତ୍ୟର ଏକ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଦିଗ, ଏ ଦିଗରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କର ଜ୍ଞାନର ବିକାଶ ନିମିତ୍ତ ଏହି ଦିଗ ପ୍ରତି ଗୁରୁତ୍ୱ ଦିଆଯାଇପାରିବ ।
- ପ୍ରବନ୍ଧ ସାହିତ୍ୟ ଅଧ୍ୟୟନ ଦ୍ୱାରା ତଥ୍ୟ ଅନୁସନ୍ଧାନର ସଂହତିପୂର୍ଣ୍ଣ ଗଦ୍ୟ ସମାବେଶକୁ ସେମାନେ ଜାଣିପାରିବେ ।
- ଓଡ଼ିଆ ନାଟକର କଥାବସ୍ତୁ, ଦୃଶ୍ୟ ସଂଯୋଜନା, ଚରିତ୍ର, ବସ୍ତ୍ର, ଉତ୍କଣ୍ଠା, ଐକତ୍ରୟୀ ଆଦି ବିଷୟରେ ନାଟକ ଓ ଏକାଙ୍କିକା ଅଧ୍ୟୟନରୁ ଜ୍ଞାତ ହେବେ ।
- ତୁଳନାତ୍ମକ ସାହିତ୍ୟ ହେଉଛି ସମ୍ପ୍ରତି ଏକ ଆହ୍ୱାନକାରୀ ପ୍ରସଙ୍ଗ । ଏହା ଆମକୁ ବିଶ୍ୱସାହିତ୍ୟ ସହିତ ଯୋଡ଼ିବାରେ ସହାୟକ ହେବ । ଏହାଦ୍ୱାରା ଦେଶଦେଶ, ଜାତିଜାତି, ସଂସ୍କୃତି, ସାହିତ୍ୟ ମଧ୍ୟରେ ଭାବଗତ ସାମ୍ୟ ରହିପାରିବ । ବିଦ୍ୟାର୍ଥୀମାନେ ଏହାକୁ ଜାଣିବାକୁ ପାଇବେ ।
- ଓଡ଼ିଶାରେ ପ୍ରଦର୍ଶିତ ହେଉଥିବା ପାଲା, ଦାସକାଠି, ଭାରତଲୀଳା, ମୋଗଲତାମସା, ଦଣ୍ଡନାଟ, ଛନ୍ଦନାଟ, ଚଇତି ଘୋଡ଼ାନାଟ, ସଖୀନାଟ, ପଶୁମୁଖା ନାଟ, କଣ୍ଠେଇନାଟର ବିଷୟବସ୍ତୁ, ଆଖ୍ୟାନ, ଚରିତ୍ର, ଗୀତ ଓ ଧର୍ମୀୟ ଚିନ୍ତାଧାରା ଆଦି ବିଷୟରେ ସେମାନେ ଅବଗତ ହେବେ ।
- ଗ୍ରନ୍ଥ ସମ୍ପାଦନା ଓ ଅନୁବାଦ ସାହିତ୍ୟ ଆଲୋଚନା ଫଳରେ ପାଠ ନିର୍ଣ୍ଣୟ, ବ୍ୟାଖ୍ୟା ସହିତ ମୂଳ ଲେଖାର ଅନୁଭୂତି ସମ୍ପର୍କରେ ଜାଣିପାରିବେ ।
- ଆପଣାର ଆତ୍ମା ଓ ପସନ୍ଦ ଭିତ୍ତିକ ବିଷୟ ଅଧ୍ୟୟନ ମାଧ୍ୟମରେ ଓଡ଼ିଆ ଭାଷା ସାହିତ୍ୟର ଛାତ୍ରଛାତ୍ରୀମାନେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ବିଭିନ୍ନ ସ୍ନାତକୋତ୍ତର ବିଭାଗ ପକ୍ଷରୁ ଗ୍ରହଣ କରାଯାଇଥିବା ଅନ୍ୟାନ୍ୟ ବିଷୟ ମଧ୍ୟରୁ କୌଣସି ଏକ ନିର୍ଦ୍ଦିଷ୍ଟ ବିଭାଗର ପାଠ୍ୟକ୍ରମରେ ନିଜ ପସନ୍ଦ ମୁତାବକ ଅଧ୍ୟୟନ କରିବାର ସୁଯୋଗ ପାଇବେ । ବିଶ୍ୱବିଦ୍ୟାଳୟର ଅନ୍ୟାନ୍ୟ ସ୍ନାତକୋତ୍ତର ବିଭାଗର ବିଦ୍ୟାର୍ଥୀମାନେ ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ଆଞ୍ଚଳିକ ସାହିତ୍ୟର ଅଧ୍ୟୟନ କରିବା ବ୍ୟବସ୍ଥା ପାଠ୍ୟକ୍ରମରେ ରହିଥିବା ହେତୁ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କର ଜ୍ଞାନର ବିକାଶ ହୋଇପାରିବ ।

ପାଠଦାନର ପୂର୍ବ ପ୍ରସ୍ତୁତି (Pre-Requisite)

ପାଠଦାନ ନିମିତ୍ତ ନିମ୍ନଲିଖିତ ଦିଗ ପ୍ରତି ଗୁରୁତ୍ୱ ପ୍ରଦାନ କରିବା ବିଧେୟ

- ପାଠ୍ୟକ୍ରମ ଓ ପାଠ୍ୟଚର୍ଚ୍ଚା ପ୍ରସଙ୍ଗରେ ପ୍ରତିଶ୍ଳୁତିବନ୍ଧ ହେବା ।
- ନିର୍ଦ୍ଧାରିତ ସମୟ ମଧ୍ୟରେ ପାଠ୍ୟ ବିଷୟବସ୍ତୁର ପରିସମାପ୍ତି କରିବା ।
- ପାଠଦାନ ପ୍ରତି ସମ୍ବେଦନ ଓ ସଚେତନ ରହି ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ଏଥିପ୍ରତି ପ୍ରେରଣା ଜାତକରାଇବା ।
- ଶିକ୍ଷାଦାନ ସମୟରେ ବିଦ୍ୟାର୍ଥୀମାନଙ୍କର ବୋଧଶକ୍ତି/ଚିନ୍ତାଧାରାକୁ ଉତ୍ତୀବିତ କରିବା ପାଇଁ ବିଭିନ୍ନ କଳାକୌଶଳ ଅବଲମ୍ବନ କରିବା ।
- ପାଠଦାନ ଶେଷରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ବିଷୟଟିକୁ କେତେଦୂର ହୃଦୟଙ୍ଗମ କଲେ, ତାହାକୁ ଜାଣିବାପାଇଁ ମୌଖିକ ପ୍ରଶ୍ନ ସହିତ ଲିଖିତ ପରୀକ୍ଷା କରିବା ।

ଶିକ୍ଷାଦାନ ଯୋଜନା (Teaching Scheme)

ଶ୍ରେଣୀ କକ୍ଷରେ ଶିକ୍ଷାଦାନର ସୁବ୍ୟବସ୍ଥା କିପରି ନିୟମିତ କାର୍ଯ୍ୟକାରୀ ହୋଇପାରିବ, ସେ ଦିଗରେ ପ୍ରାଥମିକ ଗୁରୁତ୍ୱ ପ୍ରଦାନ କରାଯିବା ବିଧେୟ ।

- ଶ୍ରେଣୀ ଗୃହର ଶିକ୍ଷାଦାନକୁ ସମୃଦ୍ଧ କରିବାପାଇଁ ବୈଦ୍ୟୁତିକ ଶୈକ୍ଷିକ ମାଧ୍ୟମ ପାଖାପାଖି, ହ୍ୟାଣ୍ଡଆଉଟ୍ ପ୍ରଭୃତି ଉପକରଣଗୁଡ଼ିକର ଉପଯୋଗ କରାଯାଏ ।
- ବିଦ୍ୟାର୍ଥୀମାନେ ବିଷୟଟିକୁ ପ୍ରତ୍ୟକ୍ଷଭାବେ ଅବଗତ ହେବା ପାଇଁ ଟ୍ୟୁଟୋରିଆଲ୍ କ୍ଲାସ୍ ବ୍ୟବସ୍ଥା କରାଯାଇଥାଏ ।
- ବିଦ୍ୟାର୍ଥୀମାନଙ୍କ ବୋଧଶକ୍ତିକୁ ପରିଚାଳିତ କରିବା ପାଇଁ ମେଣ୍ଟର-ମେଣ୍ଟି ବ୍ୟବସ୍ଥା କରାଯାଏ ।
- ରାଜ୍ୟ ଓ ରାଜ୍ୟବାହାର ବିଷୟ ବିଶେଷଜ୍ଞମାନଙ୍କୁ ଆମନ୍ତ୍ରଣ କରାଯାଇ ଶିକ୍ଷାଦାନ କରିବା ଫଳରେ ବିଦ୍ୟାର୍ଥୀମାନଙ୍କର ବୋଧ/ଜ୍ଞାନ ଶକ୍ତିକୁ ପ୍ରସାରିତ କରିବା ପାଇଁ ସୁଯୋଗ ସୃଷ୍ଟି କରାଯାଇଥାଏ ।
- ଓଡ଼ିଆ ସାହିତ୍ୟର ସୁସ୍ପଷ୍ଟ ଆଲୋଚନା ସମାଲୋଚନା ନିମିତ୍ତ ସାପ୍ତାହିକ ପାଠକ୍ରମ ବ୍ୟବସ୍ଥା ରହିଛି ।

ପାଠ୍ୟକ୍ରମର ନିଷ୍ପତ୍ତି (Programme Outcome)

- ଓଡ଼ିଆ ସାହିତ୍ୟର ବିଭିନ୍ନ ବିଭାଗ ସମ୍ପର୍କରେ ଜ୍ଞାତ ହେବେ ।
- ଓଡ଼ିଆ ସାହିତ୍ୟରେ ବୈଜ୍ଞାନିକ ଭିତ୍ତିରେ ଗବେଷଣା କରିବାର ସୁଯୋଗ ସୃଷ୍ଟି ହେବ ।

- ଓଡ଼ିଆ ଭାଷାସାହିତ୍ୟ ଅଧ୍ୟୟନରେ ପାରଦର୍ଶିତା ଅର୍ଜନ କରି ଆପଣା ଧୀ-ଶକ୍ତିର ସୁବିନିଯୋଗ ଫଳରେ ନେଟ୍ (NET), ଜେ.ଆର୍.ଏଫ୍ (JRF), ଏସ୍.ଏସ୍.ବି(SSB), ଓ.ପି.ଏସ୍.ସି. (OPSC), ପି.ଜି.ଟି.(PGT) ଭଳି ପ୍ରତିଯୋଗିତା ମୂଳକ ପରୀକ୍ଷାଗୁଡ଼ିକରେ କୃତକାର୍ଯ୍ୟ ହେବାପାଇଁ ଯୋଗ୍ୟ ହୋଇପାରିବେ ।
- ଅଣଓଡ଼ିଆମାନଙ୍କୁ ଓଡ଼ିଆ ଭାଷା ଶିକ୍ଷାଦାନ କ୍ଷେତ୍ରରେ ନିଜକୁ ନିଯୋଜିତ କରିପାରିବେ ।
- ଓଡ଼ିଆ ଭାଷାର ନିର୍ଭୁଲ ଉଚ୍ଚାରଣ ଓ ଶୁଦ୍ଧାଶୁଦ୍ଧ ନିର୍ଣ୍ଣୟ କରିବାରେ ସହାୟକ ହେବ ।

[ଇଚ୍ଛାଭିତ୍ତିକ ସମ୍ମାନ ପଦ୍ଧତି ସ୍ଥାନାନ୍ତରଣ(Choice Based Credit Transfer) ପାଠ୍ୟକ୍ରମକୁ ୨୦ ଗୋଟି ପତ୍ର ଓ ଚାରିଗୋଟି ସେମିଷ୍ଟରରେ ବିଭକ୍ତ କରାଯାଇଅଛି । ପ୍ରତ୍ୟେକ ସେମିଷ୍ଟର ୫ ଗୋଟି ପତ୍ର ଏବଂ ୨୦ କ୍ରେଡିଟ୍ । ପ୍ରତ୍ୟେକ ପତ୍ର ୧୦୦ ନମ୍ବର ବିଶିଷ୍ଟ ଏଥିରୁ ୮୦ ନମ୍ବର ପାଇଁ ୩ ଘଣ୍ଟା ସମୟ ଅବଧି ବିଶ୍ୱବିଦ୍ୟାଳୟ ପରୀକ୍ଷା (End Semester) ଓ ୨୦ ନମ୍ବର ପାଇଁ ୧ ଘଣ୍ଟା ଅବଧି ଆଭ୍ୟନ୍ତରୀଣ (Internal) ପରୀକ୍ଷା ପାଇଁ ଉଦ୍ଦିଷ୍ଟ ।]

ପ୍ରଥମ ସେମିଷ୍ଟର (1st Semester)

Paper Code: ODIA C 101

4Credit

100Marks

ଭାରତୀୟସାହିତ୍ୟ (Bharatiya Sahitya)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଭାରତୀୟ ସାହିତ୍ୟର ଚାରିଗୋଟି ପ୍ରାଚୀନ ସାହିତ୍ୟର ଧାରା ଯଥା; ସଂସ୍କୃତ, ପାଳି, ପ୍ରାକୃତ ଓ ଅପଭ୍ରଂଶ ସମ୍ବନ୍ଧରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ସାମଗ୍ରିକ ଧାରଣା ଲାଭ କରିବେ ।

ଯୁନିଟ୍-୧: କୁମାର ସମ୍ଭବମ୍ (୫ମସର୍ଗ) -କାଳିଦାସ(Kumara Sambhabam-Panchama Sarga : Kalidas)

ଯୁନିଟ୍-୨: ପାଳି ଧମ୍ମପଦ-ଯମକ ବଗ୍ଗୁ(Pali Dhammapada- Jamaka Bagga)

ଯୁନିଟ୍-୩: କର୍ପୂରମଞ୍ଜରୀ-ରାଜଶେଖର(Karpuramanjari-Rajsekhar)

ଯୁନିଟ୍-୪: ଚର୍ଯ୍ୟାଗୀତିକା(CharyaGeetika):

(କ) କାହ୍ନୁପାଦ- ଡୋମ୍ବିଚର୍ଯ୍ୟା, ବାଟାଘାଲଚର୍ଯ୍ୟା, ଡୋମ୍ବିହରୁକଚର୍ଯ୍ୟା

(Kahnupada-DombiCharya, BataogaalaCharya, DombiherukaCharya)

(ଖ) ଲୁଇପାଦ -କାୟାତରୁଚର୍ଯ୍ୟା, ସାହଜାତ୍ୱଚର୍ଯ୍ୟା

(Luipada-KayataruCharya, SahajatatwaCharya)

ନିଷ୍ପତ୍ତି (Course Outcome)

ପ୍ରାଚୀନ ଭାରତୀୟ ସାହିତ୍ୟ ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ଅବଗତ କରାଇବା ସହିତ ସାଂପ୍ରତିକ ଓ ପ୍ରାଚୀନ ସାହିତ୍ୟ ମଧ୍ୟରେ ରହିଥିବା ପ୍ରଭେଦ ଜଣାଇବା ଏହି ପତ୍ରର ଉଦ୍ଦେଶ୍ୟ ।

Paper Code: ODIA C 102

4Credit

100Marks

ଭାରତୀୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ(Bharatiya Sahitya Tatwa)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଭାରତୀୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ ସମ୍ବନ୍ଧରେ ଏକ ସ୍ଥୂଳଧାରଣା ଦେବା ଏହି ପତ୍ର ପରିକଳ୍ପନାର ମୂଳ ଉଦ୍ଦେଶ୍ୟ ।

ଯୁନିଟ୍-୧: ରସତତ୍ତ୍ୱ(Rasatatwa)

ଯୁନିଟ୍-୨: ଧ୍ୱନି, ଔଚିତ୍ୟ(Dhwani, Ouchitya)

ଯୁନିଟ୍-୩: ରୀତି(Reeti)

ଯୁନିଟ୍-୪: ବକ୍ରୋକ୍ତି, ଅଳଙ୍କାର (Bakrokti, Alankara)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଭାରତୀୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ ଆଲୋଚନା କ୍ରମରେ ଆଳଙ୍କାରିକଗଣ ରୀତି, ଅଳଙ୍କାର, ବକ୍ରୋକ୍ତି, ଔଚିତ୍ୟ, ଧ୍ୱନି, ରସ ଆଦି ଆଲୋଚନା ପ୍ରସଙ୍ଗରେ କାବ୍ୟର ବିଷୟବସ୍ତୁ, ଚରିତ୍ର ଏବଂ ପ୍ରକୃତି ଚିତ୍ରଣକୁ କିପରି ଗୁରୁତ୍ୱ ଦେଇଛନ୍ତି ସେ ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀ ଜାଣିପାରିବେ ।

Paper Code: ODIA C 103

4 Credit

100Marks

ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ (Paschatya Sahitya Tatwa)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ପାଶ୍ଚାତ୍ୟ ସାରସ୍ୱତ ସାହିତ୍ୟ ଜଗତରେ ଖ୍ୟାତିଲାଭ କରିଥିବା ଆରିଷ୍ଟୋଟଲ, ପ୍ଲାଟୋ, ହୋମର ଆଦି ଯୁଗଜ୍ଞାନୀମାନଙ୍କ ଚିନ୍ତାର ମହନୀୟତା ବଳରେ କଳାସୃଷ୍ଟିରେ ପ୍ରକୃତିର ଭୂମିକା ପ୍ରକୃତିର କଳାନ୍ୱିତ ରୂପ, ଦାର୍ଶନିକ ଅନୁଚିନ୍ତନ ସହିତ ସୌନ୍ଦର୍ଯ୍ୟ ବୋଧର ସମନ୍ୱୟ ସମ୍ବନ୍ଧରେ ଧାରଣା ଦେବା ଏହି ପତ୍ରର ଲକ୍ଷ୍ୟ ।

ଯୁନିଟ୍-୧:ରୋମାଣ୍ଟିସିଜମ୍, କ୍ଲାସିସିଜମ୍(Romanticism, Classicism)

ଯୁନିଟ୍-୨:ଚିତ୍ରକଳ୍ପବାଦ, ପ୍ରତୀକବାଦ(Chitrakalpabada Pratikabada)

ଯୁନିଟ୍-୩:ଅସ୍ତିତ୍ୱବାଦ(Astitwabada)

ଯୁନିଟ୍-୪:ମିଥ(Myth)

ନିଷ୍ପତ୍ତି (Course Outcome)

ପାଶ୍ଚାତ୍ୟ ସାହିତ୍ୟ ତତ୍ତ୍ୱ ଅଧ୍ୟୟନ ଦ୍ୱାରା ଛାତ୍ରଛାତ୍ରୀମାନେ ରୋମାଣ୍ଟିସିଜମ୍, କ୍ଲାସିସିଜମ୍ ସମାଲୋଚନାର ସୂତ୍ର, ଭାଷାଭିତ୍ତିକ ସମୀକ୍ଷା, କଳାତ୍ମକ ସମାଲୋଚନା, ଅସ୍ତିତ୍ୱବାଦୀ ଦର୍ଶନ, ମିଥ୍ ଚେତନା ପରି ସମାଲୋଚନା କିପରି ବିକଶିତ ହୋଇଛି ସେ ସମ୍ବନ୍ଧରେ ଅବଗତ ହେବେ ।

Paper Code: ODIA C 104

4 Credit

100 Marks

ଭାଷାବିଜ୍ଞାନ(Bhasa Bijnan)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଓଡ଼ିଆ ଭାଷାକୁ ଜାଣିବାକୁ ହେଲେ ଭାଷା ସମ୍ପର୍କରେ ସାଧାରଣ ନିୟମ ଭିତ୍ତିକ ଜ୍ଞାନ ଅର୍ଜନ କରିବା ଏକାନ୍ତ ଆବଶ୍ୟକ, ତେଣୁ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କ ପାଇଁ ଏହା ଜ୍ଞାନର ଭଣ୍ଡାର ପରି କାର୍ଯ୍ୟ କରିବ ।

ଯୁନିଟ୍-୧:ଭାଷାର ସଂଜ୍ଞା ଓ ଶ୍ରେଣୀ ବିଭାଗ, ବାକ୍ୟରୂପ, ଧ୍ୱନି ଉଚ୍ଚାରଣ ଓ ଧ୍ୱନିର ବିଭାଗୀକରଣ

(Bhasara Sangya O Shrenee Bibhag, Bakjantra, Dwani Uccharan O Dwanira Bibhagi Karan)

ଯୁନିଟ୍-୨:ଓଡ଼ିଆ ଧ୍ୱନିର ବର୍ଗୀକରଣ(Odia Dwanira Bargikaran)

ଯୁନିଟ୍-୩:ଓଡ଼ିଆ ଧ୍ୱନି ପରିବର୍ତ୍ତନର ବିଭିନ୍ନ ଦିଗ ଓ ବିଭିନ୍ନ କାରଣ

(Odia Dwani Paribartanara Bibhinna Diga O Bibhinna Karana)

ଯୁନିଟ୍-୪:ଓଡ଼ିଆ ଶବ୍ଦର ବ୍ୟୁତ୍ପତ୍ତି(Odia Sabdara Byutpatti)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଭାଷା ପାରମ୍ପରିକ ବ୍ୟାକରଣଠାରୁ ନିଜର ସ୍ୱାତନ୍ତ୍ର୍ୟ ବଜାୟ ରଖି ଏହା ଧ୍ୱନିବିଜ୍ଞାନ, ଶବ୍ଦବିଜ୍ଞାନ, ରୂପବିଜ୍ଞାନ, ଅର୍ଥ ବିଜ୍ଞାନ ଆଦି ବିଭାଗରେ ନିଜର କାର୍ଯ୍ୟ ବିସ୍ତାର କରିଛି, ତାହା ଛାତ୍ରଛାତ୍ରୀ ଜାଣିବା ସହିତ ଭାଷା ପରିବର୍ତ୍ତନର ଉପାଦେୟତା, ପ୍ରୟୋଜନୀୟତା, ଧ୍ୱନି, ନିୟମ ଓ ଭାଷାବିଜ୍ଞାନ ଚର୍ଚ୍ଚାର ଇତିହାସ ସମ୍ବନ୍ଧରେ ଅବଗତ ହେବେ ।

Paper Code: ODIAC105

4 Credit

100 Marks

ପ୍ରାଚୀନ ଓଡ଼ିଆ ସାହିତ୍ୟ:ପୁରାଣ ଓ ଗଦ୍ୟ(Prachina Odia Sahitya Purana O Gadya)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ପ୍ରାଚୀନ ସାହିତ୍ୟରେ ଧାର୍ମିକ ଆବେଦନ ଓ ଆଧ୍ୟାତ୍ମିକ ପରମ୍ପରା ବା ରାତିନୀତିକୁ ନେଇ ପ୍ରାଚୀନ କବିକୁଳ ତାଙ୍କ ସାହିତ୍ୟର ମୁଖ୍ୟ ଆଧାର ଭାବେ ଗ୍ରହଣ କରିଥିଲେ, ତାହା ପ୍ରାଚୀନ ଓଡ଼ିଆ ସାହିତ୍ୟ ପୁରାଣ ଓ ଗଦ୍ୟସାହିତ୍ୟ ଅଧ୍ୟୟନରୁ ଛାତ୍ରଛାତ୍ରୀ ଅବଗତ ହେବେ ।

ଯୁନିଟ୍-୧: ସାରଳା ମହାଭାରତ ମୁଷଳୀପର୍ବ (ସଂପୂର୍ଣ୍ଣ), ସଂ-ଆର୍ତ୍ତବଲ୍ଲଭ ମହାନ୍ତି

(Sarala Mahabharata Musali Parba(Sampurna),Ed.Artaballabh Mahanty)

ଯୁନିଟ୍-୨: କୃଷ୍ଣସିଂହ ମହାଭାରତ (କଚ ଓ ଦେବଯାନୀ କଥାଠାରୁ ଯଯାତିଙ୍କ ସ୍ଵର୍ଗପ୍ରାପ୍ତି ପର୍ଯ୍ୟନ୍ତ)

Krusna Singha Mahabharat (Kacha O Debajani Kathatharu Jajatinka Swargaprapiti Paryanta)

ଯୁନିଟ୍-୩: ଭାଗବତ (ଅବଧୂତ ଯଦୁରାଜା ସମ୍ବାଦ)- ଜଗନ୍ନାଥ ଦାସ

Bhagabata (Abadhuta Jadu Raja Sambada), Jagannath Das

ଯୁନିଟ୍-୪: ରୁଦ୍ରସୁଧାନିଧି, ସଂ-ଡ. କୃଷ୍ଣଚରଣ ସାହୁ (୧୯୮୨, ପୃଷ୍ଠା-୩୬ ପର୍ଯ୍ୟନ୍ତ)

Rudra Sudhanidhi,(Sam-Dr. K.C. Sahu, 1982, Upto 36 Pages)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଓଡ଼ିଆ କବିମାନେ ଇତିହାସ ଓ ପୁରାଣର ସମିଶ୍ରଣ ଓ ସମନ୍ବୟର ରୂପରେଖ କିପରି ପ୍ରସ୍ତୁତ କରିଛନ୍ତି, ତାହା ଛାତ୍ରଛାତ୍ରୀ ଜାଣିବା ସହିତ ପ୍ରାଚୀନ ଗଦ୍ୟଗ୍ରନ୍ଥର ଭାଷାଶୈଳୀ ଓ ଲକ୍ଷଣ ସମ୍ପର୍କରେ ଧାରଣା ପାଇପାରିବେ ।

ଦ୍ଵିତୀୟ ସେମିଷ୍ଟର(2nd Semester)

Paper Code: ODIA C 201

4 Credit

100Marks

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ: ଆଦ୍ୟପର୍ବ-୧୯୪୭ ପର୍ଯ୍ୟନ୍ତ(Adhunika OdiaSahitya: Adyaparba- upto 1947)

(ଉପନ୍ୟାସ, କ୍ଷୁଦ୍ରଗଳ୍ପ, କାବ୍ୟ, କବିତା, ପ୍ରବନ୍ଧ)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟର ରୂପରେଖ ଜାଣିବା ସହିତ ପରମ୍ପରାକୁ କିପରି ଆଧୁନିକତା ସହିତ ତୁଳନା କରାଯାଇଛି, ସେ ସଂପର୍କରେ ଅବଗତ ହେବେ । ଏହା ସହିତ ମଣିଷର ଚିନ୍ତା, ଚେତନା, ସ୍ଵପ୍ନ, ପ୍ରତୀକ, ରୂପକଳ୍ପ ଆଚାରବିଚାର ପୋଷାକ ପରିଧେୟ ମଣିଷର ପୁରୁଷାନ୍ତକ୍ରମେ ପରିବର୍ତ୍ତନ ହୋଇଥାଏ । ସେ ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ସଚେତନ ହେବା, ଏହି ପାଠ୍ୟକ୍ରମର ମୁଖ୍ୟ ଉଦ୍ଦେଶ୍ୟ ।

ଯୁନିଟ୍-୧ : ଉପନ୍ୟାସ(Upanyaasa)ମାମୁ: ଫକୀରମୋହନ ସେନାପତି (Mamu : Fakir Mohan Senapati)

ଯୁନିଟ୍-୨ : କ୍ଷୁଦ୍ରଗଳ୍ପ(KhyudraGalpa)

ରେବତୀ -ଫକୀରମୋହନ ସେନାପତି(Rebatee - Fakir Mohan Senapati)

ମାଂସର ବିଳାପ-କାଳିନ୍ଦୀଚରଣ ପାଣିଗ୍ରାହୀ (Mansara Bilapa -KalindiCharan Panigrahi)

ମାଗୁଣିର ଶଗଡ଼-ଗୋଦାବରୀଶ ମହାପାତ୍ର(Magunira Shagada-Godabarish Mahapatra)

ବୁଢ଼ାଶଙ୍କାରୀ -ଲକ୍ଷ୍ମୀକାନ୍ତ ମହାପାତ୍ର(BudhaShankhari-Lakshmikant Mahapatra)

କଳିଙ୍ଗଶିଳ୍ପୀ -ରାଜକିଶୋର ରାୟ(Kalinga Shilpi- Rajkishore Ray)

ଅନ୍ଧାରୁଆ-ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟ(Andharua-Sacchidananda Rautray)

ଯୁନିଟ୍-୩ : କାବ୍ୟ(KABYA) - ମହାଯାତ୍ରା(୫ମ ସର୍ଗ ପର୍ଯ୍ୟନ୍ତ):ରାଧାନାଥ ରାୟ

Mahajatra (Upto 5thSarga)-Radhanath Ray

କବିତା(OR)

କବିତା(KABITA)

ରଷିପ୍ରାଣେ ଦେବାବତରଣ-ମଧୁସୂଦନ ରାଓ(Rushiprane Debatataran-Madhusudan Rao)

ମଧୁମୟ -ଗଙ୍ଗାଧର ମେହେର(Madhumaya-Gangadhar Meher)

କାକବାରତା-ନନ୍ଦକିଶୋର ବଳ(Kaka Barata-Nandakishore Bala)

କାଳିଜାଇ -ଗୋଦାବରୀଶ ମିଶ୍ର(Kalijai-Godabarish Mishra)

ମହାନଦୀରେ ଜ୍ୟୋତ୍ସ୍ନାବିହାର-ମାୟାଧର ମାନସିଂହ(Mahanadire Jyotsnabihar-Mayadhara Manasingh)

ଶେଫାଳି ପ୍ରତି-କୁନ୍ତଳାକୁମାରୀ ସାବତ(Shephaliprati-Kuntala Kumari Sabat)

ପ୍ରତିମାନାୟକ-ସଚ୍ଚି ରାଉତରାୟ(PratimaNayak-Sacchidananda Rautray)

ଯୁନିଟ୍-୪ : ପ୍ରବନ୍ଧ (PRABANDHA)

ଓଡ଼ିଆ ଜାତି କିଏ-ଗୋପବନ୍ଧୁ ଦାସ(Odia Jati Kie-Gopabandhu Das)

ଶିକ୍ଷା-ବିଶ୍ୱନାଥ କର(Shikhya-Biswanath Kar)

ମୋ ନିଶା-ନୀଳକଣ୍ଠ ଦାସ(Mo Nisha-Neelakantha Das)

ଭଲ ଓ ମନ୍ଦ-ବିପିନବିହାରୀ ରାୟ(Bhala o Manda-Bipin Bihari Ray)

ଅନୁତାପ -ରତ୍ନାକର ପତି(Anutapa-Ratnakar Pati)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସ୍ଥାନିତ ହୋଇଥିବା ଭାଷା, ଶୈଳୀ, ସୌନ୍ଦର୍ଯ୍ୟବୋଧ, ମୃତ୍ୟୁଚେତନା, ସାର୍ବିକ ପରିବର୍ତ୍ତନ, ସାମାଜିକ କାରଣ, ବହୁମୁଖ, ସମାନତା, ଆଧ୍ୟାତ୍ମିକ ସ୍ୱତନ୍ତ୍ରତା, ମୂଲ୍ୟବୋଧର ପାରସ୍ପରିକ ସମ୍ପର୍କ ବିଷୟରେ ଛାତ୍ରଛାତ୍ରୀ ଜାଣିପାରିବେ ।

Paper Code: ODIAC202

4 Credit

100Marks

ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ: କାବ୍ୟ ଓ ଗଦ୍ୟ(Madhyajugiya Odia Sahitya: Kabya O Gadya)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ କବିଙ୍କ କାବ୍ୟ ରଚନା କ୍ଷେତ୍ରରେ ସଂସ୍କୃତ ସାହିତ୍ୟର ଶାସ୍ତ୍ରୀୟ ନୀତିକୁ କିପରି ଅନୁସରଣ କରୁଥିଲେ, ସେସବୁ ସହ କାବ୍ୟର ପ୍ରକୃଷ୍ଟ ବନ୍ଧନ, ଛନ୍ଦବିନ୍ୟାସ ଓ ଗାନଯୋଗ୍ୟତା ସମ୍ବନ୍ଧରେ ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ଅବଗତ କରାଇବା ଏହି ପାଠ୍ୟକ୍ରମର ଉଦ୍ଦେଶ୍ୟ ।

ଯୁନିଟ୍-୧ : ରହସ୍ୟମଞ୍ଜରୀ (ପ୍ରଥମ ୦୪ଟି ଛାନ୍ଦ)-ଦେବଦୁର୍ଲଭ ଦାସ

(Rahasya Manjari (Pratham 04 Chhanda)-Debadurllabh Das)

ଯୁନିଟ୍-୨ : ଲାବଣ୍ୟବତୀ- ୦୧ ଓ ୦୬ ଛାନ୍ଦ:ଉପେନ୍ଦ୍ର ଭଞ୍ଜ(Labanyabatee- 01 & 06 Chhanda : Upendra Bhanja)

ଯୁନିଟ୍-୩ : କିଶୋରଚନ୍ଦ୍ରାନନ୍ଦ ଚମ୍ପୂ ('କ' ଗୀତଠାରୁ 'ମ' ଗୀତ ପର୍ଯ୍ୟନ୍ତ)- କବିସୂର୍ଯ୍ୟ ବଳଦେବ ରଥ

Kishore ChandranandaChampu('Ka'tharu'Ma'parjyant)- KabisuryaBaladeba Rath

ଯୁନିଟ୍-୪ : ଚତୁରବିନୋଦ (ନୀତିବିନୋଦ)- ବ୍ରଜନାଥ ବଡ଼ଜେନା

Chatura Binod(Neeti Binod) -Brajanatha Badajena

ନିଷ୍ପତ୍ତି (Course Outcome)

ଏହି ସମୟର ସାହିତ୍ୟ ରଚନାର ଚମତ୍କାରିତା, ବର୍ଣ୍ଣନାତାତ୍ପରୀ, ନାୟକ ନାୟିକାମାନଙ୍କର ମାନସିକତା, କାମଶାସ୍ତ୍ରର ଶାସ୍ତ୍ରୀୟବିବେଚନା, ଅଳଙ୍କାର ସଂଯୋଜନା, ଶବ୍ଦପାଣ୍ଡିତ୍ୟ ଉପରେ କବିମାନେ ଯେଉଁ ଗୁରୁତ୍ୱ ଦେଉଥିଲେ ବିଦ୍ୟାର୍ଥୀମାନେ ତାହା ଜାଣିବାକୁ ପାଇବେ ।

Paper Code: ODIAC203

4 Credit

100Marks

ଓଡ଼ିଆ ଲୋକସାହିତ୍ୟ(Odia LokaSahitya)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଓଡ଼ିଶାରେ ଲୋକସଂସ୍କୃତି ଗବେଷଣାର ବୈଜ୍ଞାନିକ ଅନୁଶୀଳନ କ୍ଷେତ୍ର ଅଧ୍ୟୟନର ବୈଜ୍ଞାନିକ ପ୍ରକ୍ରିୟା, ଲୋକମାନସ ସିଦ୍ଧାନ୍ତ, ସହିତ ଲୋକସାହିତ୍ୟ ଲିଖିତ ସାହିତ୍ୟର ଚେର, ତାକୁ ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ଅବଗତ କରାଇବା ସହିତ ଲୋକସାହିତ୍ୟ କିପରି ବଞ୍ଚିରହିବ ସେ ସମ୍ପର୍କରେ ଧାରଣା ଦେବା ଏହି ପତ୍ରର ମୁଖ୍ୟ ଉଦ୍ଦେଶ୍ୟ ।

ଯୁନିଟ୍- ୧ : ଓଡ଼ିଆ ଲୋକକଥାର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ । (Odia Lokakathara Swarupa O Prakarabheda)

ଯୁନିଟ୍-୨ : ଓଡ଼ିଆ ଲୋକଗୀତର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ । (Odia Lokageetara Swarupa O Prakarabheda)

ଯୁନିଟ୍-୩ : ଓଡ଼ିଆ ଲୋକନାଟକର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ । (Odia LokaNatakara Swarupa O Prakarabheda)

ଯୁନିଟ୍-୪ : ଓଡ଼ିଆପ୍ରବାଦ, ପ୍ରବଚନ, ଭଗ, ପ୍ରହେଳିକା, ଓଷା-ବ୍ରତ । (Prabada, Prabachana, Dhaga, Prahelika, Osha-Brata)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଓଡ଼ିଆ ଲୋକସାହିତ୍ୟ ଅଧ୍ୟୟନ ଫଳରେ ଲୋକସଂସ୍କୃତିର ଐତିହାସିକ ବିଚାର, ସିଦ୍ଧାନ୍ତ, ସ୍ୱରୂପ, ତତ୍ତ୍ୱ, ସଂରଚନା, ପ୍ରକାର୍ଯ୍ୟ ସମ୍ବନ୍ଧରେ ବିଦ୍ୟାର୍ଥୀମାନେ ଜ୍ଞାନଲାଭ କରିପାରିବେ ।

Paper Code: ODIAC 204

4 Credit

100 Marks

ଓଡ଼ିଆ ଭାଷାତତ୍ତ୍ୱ(Odia Bhasatatwa)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଭାଷାତତ୍ତ୍ୱ ହେଉଛି ଭାଷା ସମ୍ପର୍କରେ ସର୍ବଶେଷ, ବିସ୍ତୃତ ଓ ତାତ୍ତ୍ୱିକ ଜ୍ଞାନ ଏହା ସହିତ ବାଚିକ ଭାଷାର ଅଧ୍ୟୟନ ଭାଷାର ଅର୍ଥପରିବର୍ତ୍ତନ ଓ ଭାଷାବିଜ୍ଞାନୀମାନଙ୍କ ସମ୍ବନ୍ଧରେ ଛାତ୍ରଛାତ୍ରୀ ଅବଗତ ହେବେ ।

ୟୁନିଟ୍-୧: ଓଡ଼ିଆ ଭାଷାର ଇତିହାସ (OdiaBhasaraItihasha)

ୟୁନିଟ୍-୨: ଓଡ଼ିଆ ଭାଷା ଉପରେ ଦ୍ରାବିଡ଼, ଇଂରାଜୀ ଓ ଯାବନିକ ଭାଷାର ପ୍ରଭାବ

(Odia Bhasa Upare Dravid, English O Jabanika Bhasara Prabhaba)

ୟୁନିଟ୍-୩: ଓଡ଼ିଆ ଅର୍ଥପରିବର୍ତ୍ତନର ବିଭିନ୍ନ ଦିଗ ଓ କାରଣ(Odia Artha Paribartanara Bibhinn diga O Karana)

ୟୁନିଟ୍-୪: ଓଡ଼ିଆ ଭାଷାଚର୍ଚ୍ଚା-ଜନ୍ ବିମ୍ବ, ଗ୍ରୀୟର୍ସନ, ଗୋପୀନାଥ ନନ୍ଦଶର୍ମା, ନୀଳକଣ୍ଠ ଦାସ, କୁଞ୍ଜବିହାରୀ ତ୍ରିପାଠୀ, ଗୋଲୋକବିହାରୀ ଧଳ,

ଗଗନେନ୍ଦ୍ରନାଥ ଦାଶ (Odia BhasaCharcha-John Beams, Grearson, Gopinatha Nanda Sarma, Neelakantha Das, Kunjabihari Tripathy, Goloka Bihari Dhal, Gaganendranatha Das)

ନିଷ୍ପତ୍ତି (Course Outcome)

ବିଦ୍ୟାର୍ଥୀମାନେ ଭାଷା ନିର୍ମାଣ ପଦ୍ଧତିର ବିଶ୍ଳେଷଣ, ତାହାର ବର୍ଣ୍ଣନା, ଭାଷାର ଧ୍ୱନିପ୍ରକ୍ରିୟା, ଭାଷାର ବିଶ୍ଳେଷଣ ଜାତନିୟମ ଅର୍ଥ ପରିବର୍ତ୍ତନ ଭାଷାତତ୍ତ୍ୱ ଅଧ୍ୟୟନ ଦ୍ୱାରା ଜାଣିପାରିବେ ।

Paper Code: ODIA C 205

4 Credit

100Marks

ଅଭିଧାନ ବିଜ୍ଞାନ(Abhidhan Bigyana)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

କୋଷଗ୍ରନ୍ଥ ଅଧ୍ୟୟନରୁ ଭାଷାର ଶୁଦ୍ଧାଶୁଦ୍ଧ ନିର୍ଣ୍ଣୟ ଓଡ଼ିଆ ଭାଷାର ମୂଳଭିତ୍ତି, କଥୁତ ଓ ଲିଖିତ ଶବ୍ଦଗୁଡ଼ିକର ଆକ୍ଷରିକ ଅର୍ଥ, ଭାଷା ବ୍ୟବହାର, ଭାଷା ଓ ଶବ୍ଦର ଇତିହାସ ସମ୍ବନ୍ଧରେ ବିଦ୍ୟାର୍ଥୀ ଜ୍ଞାନ ଆହରଣ କରିପାରିବେ ।

ୟୁନିଟ୍-୧ : କୋଷଗ୍ରନ୍ଥର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ(Koshagranthara Sangya, Swarupa O Prakarabhedha)

ୟୁନିଟ୍-୨ : ଭାରତରେ କୋଷଗ୍ରନ୍ଥ ରଚନାର ପରମ୍ପରା (Bharatare Koshagrantha Rachanara Parampara)

ୟୁନିଟ୍-୩ : କୋଷଗ୍ରନ୍ଥର ପ୍ରସ୍ତୁତିର ବୈଜ୍ଞାନିକଧାରା ରା(Koshagrantha Prastutira Baijnanka Dhara)

(ଶବ୍ଦାନୁଶୀଳନ, ଶବ୍ଦ ସଂଗ୍ରହ ପ୍ରଣାଳୀ, ଶବ୍ଦ ସୃଷ୍ଟି ପ୍ରକ୍ରିୟା, ଶବ୍ଦଗୁଡ଼ିକର ବର୍ଗୀକରଣ, ଶବ୍ଦଗୁଡ଼ିକର ପ୍ରାୟୋଗିକ ଦିଗ, ଶବ୍ଦର ମୂଳଭୂମି ନିର୍ଣ୍ଣୟ)

(Shabdanushilana, Shabda Sangraha Pranali, Shabda Srusti Prakriya, Shabdara Bargikaran, Shabdara Prayogikadiga, Shabdara Mulautsanirnaya)

ୟୁନିଟ୍-୪ : ଓଡ଼ିଶାରେ

କୋଷଗ୍ରନ୍ଥ ରଚନାର ପରମ୍ପରା(Odisha Koshagrantha Rachanara Parampara)

ନିଷ୍ପତ୍ତି (Course Outcome)

ସଂପ୍ରତି ବିଜ୍ଞାନ, ଆଇନ ବ୍ୟବସାୟ, ବାଣିଜ୍ୟ, ପ୍ରଶାସନ, ରାଜନୀତି, କଚେରି ଆଦି ସଙ୍ଗେ ଆୟମାନଙ୍କର ଯେତିକି ଘନିଷ୍ଟତା ବଢ଼ୁଛି ସେତିକି ନୂଆନୂଆ ଶବ୍ଦ ଆମ ଭାଷାରେ ପ୍ରବେଶ କରୁଅଛି ପୁଣି ଶବ୍ଦର ପୁରାତନ, ଶବ୍ଦ ଓ ବାକ୍ୟାଂଶ ଜାତିବିଶେଷ ପ୍ରଚଳିତ ଶବ୍ଦ ସମ୍ବନ୍ଧରେ ଜ୍ଞାନଲାଭ କରିବେ ।

Paper Code: ODIA V.A.C. 206

Non-Credit

Grade Point

VALUE ADDED COURSE

ସର୍ଜନଶୀଳ ସାହିତ୍ୟ (CREATIVE WRITINGS)

Programme Duration

The duration of value added course is 30 hours with a combination 18 hours (60%) of theory and 12 hours (40%) of practical. However, the combination of theory and practical shall be decided by the course teacher with the approval of the Head of the Department.

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ସ୍ନାତକୋତ୍ତର ଶ୍ରେଣୀର ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କର ପାଠ୍ୟକ୍ରମ ବାହାରେ ସେମାନଙ୍କ ମଧ୍ୟରେ ସର୍ଜନାତ୍ମକ ଚେତନାର ଅଭିବୃଦ୍ଧି ଏହି ପାଠ୍ୟକ୍ରମର ଉଦ୍ଦେଶ୍ୟ । (Value-added courses are those courses designed to enhance the standard of the students beyond those levels specified in academic curriculum. In order to enhance employability of the students value added courses are included in the curriculum. Add-on programs allow students to supplement degree programs with shorter, practical and industry-focused certificate and diploma program

ୟୁନିଟ୍-୧ : ଗଳ୍ପ ଲିଖନ କଳା (GalpaLikhana Kala)

ୟୁନିଟ୍-୨ : କବିତା ଲିଖନ କଳା (KabitaLikhana Kala)

ୟୁନିଟ୍-୩ : ନାଟକ ଲିଖନ କଳା (NatakaLikhana Kala)

ୟୁନିଟ୍-୪ : ସମାଲୋଚନା ଲିଖନ କଳା (SamalochanaLikhana Kala)

ନିଷ୍ପତ୍ତି (Course Outcome)

ସର୍ଜନଶୀଳ ସାହିତ୍ୟ ଅଧ୍ୟୟନ ଫଳରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ଭବିଷ୍ୟତରେ ଏ ଦିଗରେ ପାରଦର୍ଶିତା ଲାଭ କରିବା ସହିତ ସେମାନେ ସଫଳ ସାହିତ୍ୟିକ ହେବାର ସମ୍ଭାବନା ସୃଷ୍ଟି ହୋଇପାରିବ ।

ତୃତୀୟ ସେମିଷ୍ଟର(3rd Semester)

Paper Code: ODIA D 301

4 Credit

100Marks

ପାଠକ୍ରମ ଓ ନିବନ୍ଧ ପ୍ରସ୍ତୁତି (Seminar presentation and Preparation of Dissertation paper)

ପ୍ରସ୍ତୁତ ନିବନ୍ଧ ପ୍ରସ୍ତୁତି ବିଭାଗର ଶିକ୍ଷକଙ୍କ ପରାମର୍ଶ କ୍ରମେ ଆଞ୍ଚଳିକ ସାହିତ୍ୟ, ସଂସ୍କୃତି ଏବଂ ବ୍ୟକ୍ତିଗତ ହେବ । ଛାତ୍ରଛାତ୍ରୀମାନେ ବିଭାଗପକ୍ଷରୁ ଆୟୋଜିତ ଶ୍ରେଣୀ ପାଠକ୍ରମରେ ଭାଗ ନେଇ ଏଥିନିମିତ୍ତ ଅନ୍ତତଃ ଗୋଟିଏ ପ୍ରବନ୍ଧ ଉପସ୍ଥାପିତ କରିବେ । ଉପସ୍ଥାପିତ ପ୍ରବନ୍ଧ ନିଜ ନିଜର ନିବନ୍ଧ ପ୍ରସ୍ତୁତି ଭିତ୍ତିରେ ହେବ । ଏହାକୁ ଆଭ୍ୟନ୍ତରୀଣ (Internal) ପରୀକ୍ଷାର ଏକ ଅଂଶ ଭାବରେ ଗ୍ରହଣ କରାଯିବ ଓ ଏଥିପାଇଁ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ପୂର୍ଣ୍ଣ ସଂଖ୍ୟା ୨୦ ନମ୍ବରରୁ ନମ୍ବର ଦିଆଯିବ । ବିଭାଗୀୟ ଶିକ୍ଷକମାନଙ୍କ ଦ୍ଵାରା ଶ୍ରେଣୀ ପାଠକ୍ରମରେ ଉପସ୍ଥାପିତ ନିବନ୍ଧର ମୂଲ୍ୟାଙ୍କନ କରାଯିବ । ଅବଶିଷ୍ଟ ନମ୍ବର ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କ ନିବନ୍ଧ ପ୍ରସ୍ତୁତି (Dissertation Paper) ପାଇଁ ଉଦ୍ଦିଷ୍ଟ ରହିବ । ଏହାର ପରୀକ୍ଷା ବିଶ୍ଵବିଦ୍ୟାଳୟ ନିୟମ ଅନୁସାରେ କରାଯିବ ।

ବିଭାଗର ଛାତ୍ରଛାତ୍ରୀଙ୍କ ସଂଖ୍ୟାନୁସାରେ ସମାନ ଭାବରେ ଶିକ୍ଷକଙ୍କ ମଧ୍ୟରେ ନିବନ୍ଧ ପ୍ରସ୍ତୁତି ପେପର ବଣ୍ଟନ କରାଯାଇ ଏହା ପ୍ରସ୍ତୁତ କରାଯିବ ।

Paper Code: ODIAC302

4 Credit

100Marks

ଆଦିବାସୀ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତି (Adibasi Sahitya O Sanskruti)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଆଦିବାସୀ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ବିକାଶ ମୂଳରେ ହିଁ ନିହିତ ରହିଛି ମହାନୀୟ ଉତ୍କଳୀୟ ସଂସ୍କୃତିର ବିକାଶ । ଏହି ସଂସ୍କୃତିର ଅଧ୍ୟୟନ ଓ ଅନୁଶୀଳନ ପାଇଁ ଆଦିବାସୀ ଭାଷା, ସାହିତ୍ୟ, ନୃତ୍ୟଗୀତ, ପର୍ବପର୍ବାଣି ଇତ୍ୟାଦି ସମ୍ବନ୍ଧରେ ବିଦ୍ୟାର୍ଥୀମାନେ ଜ୍ଞାନଅର୍ଜନ କରିପାରିବେ ।

ୟୁନିଟ୍-୧ : ଓଡ଼ିଶାର ଆଦିବାସୀ ସଂସ୍କୃତିର ସ୍ଵରୂପ (Odishare Adibasi Sanskrutira Swarupa)

ୟୁନିଟ୍-୨ : ଓଡ଼ିଶାର ଆଦିବାସୀମାନଙ୍କର ସାମାଜିକ ବିବର୍ତ୍ତନ (Odishare Adibasimanankara Samajika Bibartana)

ୟୁନିଟ୍-୩ : ଆଦିବାସୀ ସାହିତ୍ୟର ବୈଚିତ୍ର୍ୟ (Adibasi Sahitya Baichitrya)

ୟୁନିଟ୍-୪ : ଆଦିବାସୀ-ବିଶ୍ଵାସ (Adibasi-Bishwas)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଆଦିବାସୀ ସଂସ୍କୃତିର ଆଲୋଚନା କଲାବେଳେ ଏମାନଙ୍କର ଭାଷା, ଅର୍ଥନୀତି, ପାରମ୍ପରିକ ଆଚାର-ବ୍ୟବହାର, ପରିବେଷ୍ଟନୀ, ଧର୍ମବିଶ୍ଵାସ ଓ ଉପାସନା, ନୃତ୍ୟ, ସଙ୍ଗୀତ, ଚିତ୍ରକଳା, ମୌଖିକ ଓ ଲିଖିତ ସାହିତ୍ୟ ରାଜନୀତିକ ଅନୁଷ୍ଠାନ ଓ ବିଚାରଧାରା, ବିବାହ, ପରିବାର ଗଠନ, ଐକ୍ୟଭାବ ଓ ସଂସ୍କୃତିକ ସାମାଜିକ ବିବର୍ତ୍ତନ ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀ ଜାଣିପାରିବେ ।

ସ୍ୱତନ୍ତ୍ରପତ୍ର(Special Paper)

A student is allowed to opt. for any one group from following 3 groups.
ଛାତ୍ରଟିଏ ତୃତୀୟ ସେମିଷ୍ଟାରରେ ଯେଉଁ ସ୍ୱତନ୍ତ୍ର ପତ୍ର ନେଇଥିବ ତତୁପରି ସେମିଷ୍ଟାରରେ ତାହାକୁ ସେହି ନିର୍ଦ୍ଦିଷ୍ଟ ସ୍ୱତନ୍ତ୍ରପତ୍ର ନେବାକୁ ହେବ ।

Group-A :ଲୋକସାହିତ୍ୟ(LokaSahitya)ODIA E 303 & ODIA E 304

Group-B :ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ(MadhyajugiyaSahitya) ODIA E 305 & ODIA 306

Group-C :ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti Odia Sahitya) ODIA E 307 & ODIA 308

ବିଭାଗ-କ (Group- A)

ଲୋକସାହିତ୍ୟ (LokaSahitya)

Paper Code: ODIA E 303

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଲୋକସାହିତ୍ୟକୁ ସ୍ୱତନ୍ତ୍ର ପତ୍ର ବା ଇଚ୍ଛାଧୀନ ପତ୍ରଭାବେ ଅଧ୍ୟୟନ କରୁଥିବା ବିଦ୍ୟାର୍ଥୀମାନେ ଲୋକସାହିତ୍ୟର ସଂଗ୍ରହ, ସମ୍ପାଦନା ଓ ତା'ର ଆଲୋଚନା କରିବା ସହିତ ଏହାର ଭିତରେ ଗୋଟିଏ ସମାଜ ବା ତା'ର ଦେଶ-ରାଜ୍ୟ-ଜାତିର ଆତ୍ମା କିପରି ଲୁଚି ରହିଛି ତାହା ଜାଣିପାରିବେ ।

ୟୁନିଟ୍-୧:ଲୋକବିଦ୍ୟାର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ(Lokabidyara Sagyan O Swarupa)

ୟୁନିଟ୍-୨:ଲୋକବିଦ୍ୟା ଅଧ୍ୟୟନର ଇତିହାସ(Lokabidya Adhyayanara Itihasa)

ୟୁନିଟ୍-୩: ଲୋକବିଦ୍ୟା ଅଧ୍ୟୟନର ବିଭିନ୍ନ ବିଚାର ପଦ୍ଧତି(Lokabidya Adhyayana Bichara Paddhati)

ୟୁନିଟ୍-୪: ଓଡ଼ିଆ ଲୋକବିଶ୍ୱାସ ଓ ଲୋକାଚାର(Odia Loka Biswas O Lokachara)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଲୋକସାହିତ୍ୟ ଅଧ୍ୟୟନ ଦ୍ୱାରା ସାମାଜିକ ଚଳଣି, ପରମ୍ପରା, ବ୍ୟବହାର, ଧର୍ମଧାରା, ଜୀବନ ପ୍ରତି ଦୃଷ୍ଟିକୋଣ, ସୌନ୍ଦର୍ଯ୍ୟବୋଧ ଆଦି ସମ୍ପର୍କରେ ଆଭାସ ମିଳିବା ସହିତ ଏହାର ସୌରଭରେ ଆମେ ନିଜକୁ ଜାଣିବା ଓ ଚିହ୍ନିପାରିବା ।

ଲୋକସାହିତ୍ୟ(LokaSahitya)

Paper Code: ODIA E 304

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଇଚ୍ଛାଧୀନ ବିଷୟର ଦ୍ୱିତୀୟ ପତ୍ର ଅଧ୍ୟୟନ କ୍ରମରେ ଲୋକକାହାଣୀ, ମୋଟିଫ୍ ତତ୍ତ୍ୱ, ଲୋକନାଟ ଓ ନାଟ ସ୍ଥାନ ପାଇଅଛି । ଲୋକ କାହାଣୀ ପ୍ରାଦେଶିକ ସାହିତ୍ୟରେ ପ୍ରସାରଲାଭ କରି ସ୍ଥାନ, କାଳ ଓ କଥକର ରୁଚି ଅନୁସାରେ କିପରି ଭିନ୍ନ ଭିନ୍ନ ଆକାର ଧାରଣ କରିଅଛି ତାହା ବିଦ୍ୟାର୍ଥୀମାନେ ଅବଗତ ହେବା ସହିତ ଜାତୀୟ ଐକ୍ୟ, ପରମ୍ପରା ସଂରକ୍ଷଣରେ ଲୋକସାହିତ୍ୟ କିପରି ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଭୂମିକା ଗ୍ରହଣ କରିଛି ତାହା ଜାଣିପାରିବେ ।

ୟୁନିଟ୍ - ୧: ଲୋକକଥାର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ(Lokakathara Sagyan O Swarupa)

ୟୁନିଟ୍ - ୨: ମୋଟିଫ୍ ଓ ଚାଲଫ୍ ତତ୍ତ୍ୱ(Motif O Type Tatwa)

ୟୁନିଟ୍ - ୩:ଓଡ଼ିଆ ଲୋକନାଟକ ଓ ଲୋକନୃତ୍ୟ(Odia LokaNataka O LokaNrutya)

ୟୁନିଟ୍ - ୪: ଓଡ଼ିଆ ଲୋକକଥାର ସାମାଜିକ ଓ ସାହିତ୍ୟିକ ଦିଗ

(Odia Lokakathara Samajika O Sahityika Diga)

ନିଷ୍ପତ୍ତି (Course Outcome)

କାହାଣୀର ମୂଳତତ୍ତ୍ୱ ହେଉଛି କଥାଭିପ୍ରାୟା ଲୋକକଥାରେ ପରମ୍ପରାଗତ, ସାଂସ୍କୃତିକ, ମନୋବୈଜ୍ଞାନିକ ଏବଂ ନୈତିକ ରୂପ ପରିଲକ୍ଷିତ ହୋଇଥାଏ । ପୁଣି ଲୋକନାଟ ଓ ନାଟରେ ଲୋକଜୀବନ ଶୈଳୀ ସଭ୍ୟତା, ପରମ୍ପରା, ନୈସର୍ଗିକ ଆହ୍ଲାଦ, କିପରି ଚିତ୍ରିତ ହୋଇଥାଏ ଛାତ୍ରଛାତ୍ରୀ ତାହା ଜାଣିବାକୁ ପାଇବେ ।

ବିଭାଗ -ଖ (Group-B)

ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ(ପ୍ରାକ୍-ଉପେନ୍ଦ୍ର ଓଡ଼ିଆ ସାହିତ୍ୟ) (Madyajugiya Sahitya- Prak-Upendra Odia Sahitya)

Paper Code: ODIA E 305

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟରୁ ସ୍ୱତନ୍ତ୍ର ପଦ୍ଧତିରେ ଅଧ୍ୟୟନ କରୁଥିବା ଛାତ୍ରଛାତ୍ରୀମାନେ ଏ ଯୁଗରେ ରଚିତ ହୋଇଥିବା ପୌରାଣିକ କାବ୍ୟ, କାଳ୍ପନିକ କାବ୍ୟଗୁଡ଼ିକରେ ପୁରାଣ ଯୁଗର ଅନୁସରଣ, ପୌରାଣିକ ଆଦର୍ଶାବଳୀର ଅନୁଶୀଳନ କିପରି କରାଯାଇଛି ତାହା ଜାଣିବାକୁ ପାଇବେ।

ଯୁନିଟ୍ - ୧: ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ : ସାମାଜିକ, ରାଜନୀତିକ ଓ ସାଂସ୍କୃତିକ ପୃଷ୍ଠଭୂମି

(Madhya Jugiya Odia Sahitya -Samajika, Rajaneetika o Sanskrutika Prusthabhumi)

ଯୁନିଟ୍ - ୨: ଓଡ଼ିଆ କାଳ୍ପନିକ କାବ୍ୟ(Odia Kalpanika Kabya)

ଯୁନିଟ୍-୩: ଓଡ଼ିଆ ପୌରାଣିକ କାବ୍ୟ(Odia Pauranika Kabya)

ଯୁନିଟ୍ -୪: ପ୍ରାକ୍ -ଉପେନ୍ଦ୍ର ଓଡ଼ିଆ କାବ୍ୟ : ଆଜିକା ଓ ଆତ୍ମିକ ଦିଗ

(Prak-Upendra Odia Kabya – Angika O Atmika Diga)

ନିଷ୍ପତ୍ତି (Course Outcome)

ମଧ୍ୟଯୁଗୀୟ ସାମାଜିକ, ରାଜନୀତିକ, ସାଂସ୍କୃତିକ ଆଲୋଚନା ପ୍ରସଙ୍ଗରେ ମୁସଲମାନ ମରହଟ୍ଟା ଶାସନର ସ୍ଥିତି, ପୌରାଣିକ ଓ କାଳ୍ପନିକକାବ୍ୟର ଲକ୍ଷଣ ସହିତ ଆଜିକା ଓ ଆତ୍ମିକଦିଗ ସମ୍ବନ୍ଧରେ ଜ୍ଞାନ ଆହରଣ କରିପାରିବେ ।

ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ: ପ୍ରାକ୍-ଉପେନ୍ଦ୍ର ଓଡ଼ିଆ କବି ଓ କାବ୍ୟ, **Madhyajugiya Sahitya: Prak-Upendra Odia Kabi O Kabya**

Paper Code: ODIA E 306

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ରଚିତ ହୋଇଥିବା ଆଖ୍ୟାୟିକା କାବ୍ୟ ରାମାୟଣ ଶୁକାଭକ୍ତିର ରସତତ୍ତ୍ୱ ଓ ଆଧ୍ୟାତ୍ମିକ ଭାବନା ଅପେକ୍ଷା କୃଷ୍ଣ ଓ ଗୋପୀମାନଙ୍କର ଲୀଳାତତ୍ତ୍ୱ, ନାୟକ ନାୟିକାମାନେ ଅଭିଶପ୍ତଗନ୍ଧର୍ବ ଓ କିନ୍ଦରୀରୂପେ ମର୍ତ୍ତ୍ୟରେ ଜନ୍ମଲାଭ, ଗଙ୍ଗାଶତ୍ରୁତିକ ଏକ ତ୍ରିଭୁଜ ମଧ୍ୟରେ ସଂଯୋଜିତ ହୋଇ ପ୍ରାକୃତିକ ଶୋଭା ଓ ରତ୍ନବର୍ଣ୍ଣନା ସମ୍ପର୍କରେ ବିଦ୍ୟାର୍ଥୀମାନେ ଅବଗତ ହୋଇପାରିବେ ।

ଯୁନିଟ୍ - ୧ : କଳ୍ପଲତା (୧ମ ଓ ୬ଷ୍ଠ ଛାନ୍ଦ) -ଅର୍ଜୁନ ଦାସ

(Kalpalata, 1st & 6th Chhanda–Arjuna Das)

ଯୁନିଟ୍ - ୨ : ଉଷାଭିଳାଷ (୧ମ ଓ ୫ମ ଛାନ୍ଦ)- ଶିଶୁଶଙ୍କର ଦାସ

(Ushabhilash, 1st & 5th Chhanda- Shishushankar Das)

ଯୁନିଟ୍ -୩: ପରିମଳା (୧ମ ଓ ୧୦ମ ଛାନ୍ଦ)- ନରସିଂହ ସେନା

(Parimala, 1st & 10th Chhanda-Narasingha Sena)

ଯୁନିଟ୍ -୪ : ପ୍ରେମାଲୋଚନା(୧ମ ଓ ୮ମ ଛାନ୍ଦ) –ବିଷ୍ଣୁ ଦାସ

(Premaalochana, 1st & 8th Chhanda–Bishnu Das)

ନିଷ୍ପତ୍ତି (Course Outcome)

ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟରେ ରସୋତ୍ତମ କାବ୍ୟକୃତି, ନାୟକ ନାୟିକାମାନଙ୍କର ଯୌବନ ଲାଭ, ଯୌନ ସଂପର୍କରେ ରସାତ୍ମକ ନିବିଡ଼ତାର ବର୍ଣ୍ଣନା, ସଂସ୍କୃତ କାବ୍ୟରୀତି ଓ ରୁଚିର ପ୍ରଭାବରେ ପ୍ରକୃତି ଚିତ୍ରଣ ଓ ରତ୍ନବର୍ଣ୍ଣନା, ଅଳଙ୍କାର ସଂଯୋଜନା ଆଦି ବିଷୟରେ ଛାତ୍ରଛାତ୍ରୀ ଜାଣିପାରିବେ ।

ବିଭାଗ-ଗ (Group-C)

ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti Odia Sahitya)

(ଭ୍ରମଣକାହାଣୀ, ରମ୍ୟରଚନା, ପ୍ରବନ୍ଧ, ଆତ୍ମଜୀବନୀ)

Paper Code: ODIA E 307

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ମଣିଷ ଅତୀତରେ ଭ୍ରମଣଜୀବନକୁ ଶ୍ରମଣ ମନେକରୁଥିଲେ । ତେଣୁ ପାଦରେ ଚାଲିଚାଲି ଦୂରପଥ ଅତିକ୍ରମ କରୁଥିଲା । ଭ୍ରମଣଜନିତ ଅନୁଭୂତିକୁ ପ୍ରବନ୍ଧରେ ସ୍ଥାନିତ କରିବା ସହିତ ତଥ୍ୟ ଅନ୍ୱେଷଣ ଓ ସଂହତିପୂର୍ଣ୍ଣ ଗଦ୍ୟ ସମାବେଶକୁ ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟକୁ ସ୍ୱତନ୍ତ୍ର ପଦ୍ଧତିରେ ଅଧ୍ୟୟନ କରୁଥିବା ଛାତ୍ରଛାତ୍ରୀମାନେ ଜାଣିପାରିବେ ।

ଯୁନିଟ୍-୧ : ପଶ୍ଚିମ ଆଫ୍ରିକାରେ ଓଡ଼ିଆ ଢେଙ୍କି-ଭୁବନେଶ୍ୱର ବେହେରା

(Paschima Afrikare Odia Dhenki– Bhubaneswar Behera)

ଯୁନିଟ୍ - ୨ : ଶୁଣପରୀକ୍ଷା-ଭୁବନେଶ୍ୱର ବେହେରା(Shuna Pareekshya-Bhubaneswar Behara)

ଯୁନିଟ୍ - ୩ : ମୋ ଜୀବନସଂଗ୍ରାମ-ସତ୍ୟନାରାୟଣ ରାଜଗୁରୁ(Mo JeebanaSangram–Satyanarayana Rajguru)

ଯୁନିଟ୍-୪ : ପ୍ରବନ୍ଧ (Prabandha)

(କ) ଖର୍ବମଣିଷ- ଚନ୍ଦ୍ରଶେଖର ରଥ(Kharba Purusha- Chandra Sekhara Rath)

(ଖ) ନୁଆମଣିଷ-ଶରତକୁମାର ମହାନ୍ତି(Nua Manisha-Sharat Kumara Mahanty)

(ଗ) ରାତି କେତେ ହେଲା-ଚିତ୍ତରଞ୍ଜନ ଦାସ(Rati Ketehele–Chittaranjan Das)

(ଘ) ପୁଷ୍ପପୁରରେ ବର୍ଷାବରଣ- କୃଷ୍ଣଚନ୍ଦ୍ର ପାଣିଗ୍ରାହୀ(Puspapurare Barsa Baran–Krushna Chandra Panigrahy)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଲେଖକର ଭ୍ରମଣ ଜନିତ ଜୀବନାନୁଭୂତି, ଅନୁଭବ, ଆବେଗ ଯୁକ୍ତିର ସୁସଞ୍ଜମତା, ଭୌଗୋଳିକ ପରିବେଶ, ଇତିହାସ ଆଦିକୁ ଦର୍ଶାଇବା ସହିତ ଲେଖକର ସାହିତ୍ୟକୃତିକୁ ବିଚାରିତ ବର୍ତ୍ତମାନ ଗ୍ରହଣକରିବା ବିଷୟରେ ବିଦ୍ୟାର୍ଥୀମାନେ ଜାଣିପାରିବେ ।

ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti Odia Sahitya)

(ନାଟକ ଓ ଏକାଙ୍କିକା)

Paper Code: ODIA E 308

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ନାଟକ ଓ ଏକାଙ୍କିକା ଗୋଟିଏ ସଂସ୍କୃତବନ୍ଧୁ ଜାତିର ପ୍ରଶୋକ୍ଷକତାର ପ୍ରତୀକ। ବହୁପ୍ରାଚୀନ କାଳରୁ ଓଡ଼ିଶାରେ ନାଟକାଭିନୟର ସମୃଦ୍ଧ ପରମ୍ପରା ରହିଆସିଥିଲେ ହେଁ ଇଂରେଜ ସଭ୍ୟତାର ପ୍ରସାର ଫଳରେ ଆଧୁନିକ ନାଟ୍ୟ କଳାର ବିକାଶସାଧୁତ ହୋଇଛି ତାହା ବିଦ୍ୟାର୍ଥୀମାନେ ଜାଣିବା ସହିତ ଏକାଙ୍କିକାର ସ୍ୱରୂପ ଓ ବିଭାଗୀକରଣ ସଂପର୍କରେ ଅବଗତ ହେବେ ।

ଯୁନିଟ୍ - ୧ : ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକର ରୂପ ଓ ଭାବ ବୈଚିତ୍ର୍ୟ

(Swadeenata parabartee Odia Natakara Rupa O Bhababaichitrya)

ଯୁନିଟ୍ - ୨ : ନନ୍ଦିକାକେଶରୀ-ମନୋରଞ୍ଜନ ଦାସ(Nadikakesharee-Manoranjan Das)

ଯୁନିଟ୍ - ୩ : ମୁଁ ଆମ୍ଭେ ଓ ଆମ୍ଭେମାନେ-ରମେଶ ପାଣିଗ୍ରାହୀ(Mu ambhe O ambhemane- Ramesh Panigrahi)

ଯୁନିଟ୍-୪ : ଏକାଙ୍କିକା (Ekankika)

(କ) ଭାଲୁଉପଦ୍ରବ-ବିଜୟ ମିଶ୍ର(Bhalu Upadraba–Bijaya Mishra)

(ଖ) ଛନ୍ଦୁବେଶି-ବିଶ୍ୱଜିତ ଦାସ(Chhadmabeshi-Biswajit Das)

(ଗ) ଦୁଃସମୟ-ନାରାୟଣ ସାହୁ(Duhsamaya–Narayan Sahu)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଆଧୁନିକ ଓଡ଼ିଆ ନାଟକ ଓ ଏକାଙ୍କିକାର କଥାବସ୍ତୁ, ଦୃଶ୍ୟ ସଂଯୋଜନା, ମଞ୍ଚଶୈଳୀ, ଚରିତ୍ର, ସଂଳାପ, ବସ୍ତ୍ର ଉତ୍କଣ୍ଠା ଆକର୍ଷକତା, ଶୈଳ୍ୟତ୍ରୟୀ, ପରିସର ଓ ବିଭିନ୍ନ ପରୀକ୍ଷା ପଦ୍ଧତି ସମ୍ବନ୍ଧରେ ଛାତ୍ରଛାତ୍ରୀ ଜ୍ଞାନଲାଭ କରିବେ ।

Paper Code: ODIA V.A.C. 309

Non-Credit

Grade Point

VALUE ADDED COURSE

ଓଡ଼ିଆ ସାହିତ୍ୟ ସମୀକ୍ଷାର ଧାରା (Odia Sahitya Sameekshyara Dharaa)

The duration of value added course is 30 hours with a combination 18 hours (60%) of theory and 12 hours (40%) of practical. However, the combination of theory and practical shall be decided by the course teacher with the approval of the Head of the Department.

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସମୀକ୍ଷା ଏକ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ବିଷୟବସ୍ତୁ । ଏହି ସମୀକ୍ଷା ମାଧ୍ୟମରେ ଜ୍ଞାନର ପରିସୀମା ବୃଦ୍ଧି ପାଇବା ସହ ସାହିତ୍ୟର ସ୍ୱରୂପ ମଧ୍ୟ ପ୍ରତିପାଦିତ ହୋଇପାରିବ । (Value-added courses are those courses designed to enhance the standard of the students beyond those levels specified in academic curriculum. In order to enhance employability of the students value added courses are included in the curriculum. Add-on programs allow students to supplement degree programs with shorter, practical and industry-focused certificate and diploma program)

ଯୁନିଟ୍ - ୧ : ବିଷୟଭିତ୍ତିକ ସମୀକ୍ଷା (Bisayabhittika Sameekshyaa)

- ଯୁନିଟ୍ -୨ : ଭାବଭିତ୍ତିକ ସମୀକ୍ଷା (Bhababhittika Sameekshyaa)
 ଯୁନିଟ୍ -୩: ଭାଷାଭିତ୍ତିକ ସମୀକ୍ଷା (Bhaasaabhittika Sameekshyaa)
 ଯୁନିଟ୍-୪ : ତୁଳନାତ୍ମକ ସମୀକ୍ଷା (Tulanaatmaka Sameekshyaa)

ନିଷ୍ପତ୍ତି) Course Outcome)

ସାହିତ୍ୟ ସମାଲୋଚନା ମୂଳକ ବିଶ୍ଳେଷଣ ବା ସମୀକ୍ଷା ସାହିତ୍ୟର ଅଧ୍ୟୟନ ମାଧ୍ୟମରେ ପିଲାମାନେ ସାହିତ୍ୟ ସୃଷ୍ଟିର ବିଷୟବସ୍ତୁ ଭାବ ଏବଂ ଭାଷାର ବୈଶିଷ୍ଟ୍ୟ ସମ୍ପର୍କରେ ଅବଗତ ହେବା ସହିତ ତୁଳନା ମାଧ୍ୟମରେ ଏକ ସାହିତ୍ୟ ସହିତ ଅନ୍ୟ ଏକ ସାହିତ୍ୟ ସୃଷ୍ଟି ମଧ୍ୟରେ ଥିବା ସାମ୍ୟ ଓ ବୈଷମ୍ୟ ସମ୍ପର୍କରେ ଅବଗତ ହୋଇପାରିବେ ।

Paper Code ODIA CT 300

4 Credit

Grade Point

[ଇଚ୍ଛାଭିତ୍ତିକ ସମ୍ମାନ ପଦ୍ଧତି ସ୍ଥାନାନ୍ତରଣ (Choice Base Credit Transfer-CBCT)ନିୟମାନୁଯାୟୀ ଏହି ପତ୍ର (ODIA CT 300)କୁ ଓଡ଼ିଆ ବିଭାଗର ଛାତ୍ରଛାତ୍ରୀଙ୍କ ବ୍ୟତୀତ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଅନ୍ୟ ବିଭାଗର ସର୍ବାଧିକ ୫୦ଜଣ ଛାତ୍ରଛାତ୍ରୀ ଅଧ୍ୟୟନ କରିପାରିବେ ।]

ଓଡ଼ିଆ ସାହିତ୍ୟଚର୍ଚ୍ଚା (Odia SahityaCharchaa)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ କଥାଭାଗ ଅଧ୍ୟୟନ ଫଳରେ କବି ସାରଳା ଦାସଙ୍କ ରଚନା କୃତି, ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କାବ୍ୟାଦର୍ଶ, ଫକୀର ମୋହନଙ୍କ ସାହିତ୍ୟ ଓ ଗୋପୀନାଥ ମହାନ୍ତିଙ୍କ କଥାସାହିତ୍ୟ ଓ ରମ୍ୟରଚନାଧର୍ମୀ ପ୍ରବନ୍ଧ ସାହିତ୍ୟ ସହିତ ଅନ୍ତରଙ୍ଗ ଭାବରେ ସମ୍ବନ୍ଧିତ ହୋଇପାରିବେ ।

- ଯୁନିଟ୍-୧ : ସାରଳା ଦାସ - କୃତି ଓ କୃତିତ୍ୱ (Sarala Das – Kruti O Krutitwa)
 ଯୁନିଟ୍-୨ : ଉପେନ୍ଦ୍ର ଭଞ୍ଜ - କୃତି ଓ କୃତିତ୍ୱ(Upendra Bhanja - Kruti O Krutitwa)
 ଯୁନିଟ୍-୩ : ଫକୀର ମୋହନ ସେନାପତି - କୃତି ଓ କୃତିତ୍ୱ(Fakira Mohan Senapati - Kruti O Krutitwa)
 ଯୁନିଟ୍-୪ : ଗୋପୀନାଥ ମହାନ୍ତି - କୃତି ଓ କୃତିତ୍ୱ(Gopinatha Mohanty - Kruti O Krutitwa)

ନିଷ୍ପତ୍ତି (Course Outcome)

ପଞ୍ଚଦଶ ଶତାବ୍ଦୀରେ ରଚିତ ସାରଳା ଦାସଙ୍କ ରାମାୟଣ ମହାଭାରତଠାରୁ ଆରମ୍ଭକରି ଉପେନ୍ଦ୍ର ଭଞ୍ଜ ମଧ୍ୟଦେଇ ଆଧୁନିକ ସାହିତ୍ୟର ଫକୀରମୋହନ ସେନାପତି ଓ ଗୋପୀନାଥ ମହାନ୍ତିଙ୍କ ସାହିତ୍ୟ ରଚନା ବିଷୟରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ଧାରଣା ପାଇପାରିବେ ।

ଚତୁର୍ଥ ସେମିଷ୍ଟର(4thSemester)

Paper Code: ODIA C 401

4 Credit

100Marks

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ:ବିକାଶପର୍ବ(Adhunika Odia Sahitya:Bikasha Parba)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ ବହୁବର୍ଣ୍ଣା । ବିଦ୍ୟାର୍ଥୀମାନଙ୍କୁ ଆଧୁନିକ ଓଡ଼ିଆ ଉପନ୍ୟାସ, ନାଟକ କ୍ଷୁଦ୍ରଗଳ୍ପ, ରମ୍ୟରଚନାଧର୍ମୀ ପ୍ରବନ୍ଧ ଓ ଆତ୍ମଜୀବନୀ ସମ୍ବନ୍ଧରେ ଜ୍ଞାନଲାଭ କରିବା ସହିତ, ପ୍ରାଚୀନ ଓ ଆଧୁନିକ ସାହିତ୍ୟ ମଧ୍ୟରେ ଥିବା ପାର୍ଥକ୍ୟର ଧାରଣା ପାଇପାରିବେ ।

- ଯୁନିଟ୍-୧: ଉପନ୍ୟାସ (Upanyas)
 ଅମୃତରସସନ୍ତାନ – ଗୋପୀନାଥ ମହାନ୍ତି(AmrutaraSantana-Gopinath Mohanty)
 ଯୁନିଟ୍-୨: ନାଟକ(Nataka)
 ଅମୃତସ୍ୟାପୁତ୍ରଃ- ମନୋରଞ୍ଜନ ଦାସ(AmrutasyaPutrah- Manoranjan Das)
କ୍ଷୁଦ୍ରଗଳ୍ପ: (KhyudraGalpa)
 ମହାନିର୍ବାଣ-ସୁରେନ୍ଦ୍ର ମହାନ୍ତି(Mahanirbana - Surendra Mahanty)
 ତିମିରଫୁଲ-ଅଖିଳମୋହନ ପଟ୍ଟନାୟକ(DimiriPhula - Akhila Mohan Pattanaik)
 ମଧୁବନର ମେୟର-ମନୋଜ ଦାସ(Madhubanara Meyar - Manoj Das)

ମୁଖା-କୃଷ୍ଣପ୍ରସାଦ ମିଶ୍ର(Mukha - Krushna Prasad Mishra)

ଠାକୁରଘର-କିଶୋରୀଚରଣ ଦାସ(Thakuraghara – KishoriCharan Das)

ଅନ୍ଧରାତିର ସୂର୍ଯ୍ୟ-ମହାପାତ୍ର ନୀଳମଣି ସାହୁ(AndhaRatrira Surya - Mahapatra Neelamani Sahu)

ଯୁନିଟ୍-୩: ପ୍ରବନ୍ଧ (Prabandha)

ମୁଁ ସତ୍ୟଧର୍ମା କହୁଛି (ପ୍ରଥମ ୫ଟି)-ଚନ୍ଦ୍ରଶେଖର ରଥ(Mu Satyadharm Kahuchhi–Chandrasekhar Rath)

(କ) ମୁଁ ସତ୍ୟଧର୍ମା କହୁଛି, (Mu Satyadharm Kahuchhi)(ଖ) ଦେବକୀ, (Debakee)(ଗ) ମୁଁ ଏକ ପାଦପ, (Mu eka Padap)(ଘ) ମୁଁକ୍ଷେତ୍ର ଯିବି, (Mu kshetrajibi) (ଙ) ଯୀଶୁ (Jisu)

ଯୁନିଟ୍-୪: ଆତ୍ମଜୀବନୀ (Autobiography):ମୋ ସମୟର ଓଡ଼ିଶା- କୃଷ୍ଣଚନ୍ଦ୍ର ପାଣିଗ୍ରାହୀ(Mo Samayara Odisha-K.C.Panigrahy)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ପ୍ରତିଫଳିତ ବାସ୍ତବ ଜୀବନାନୁଭୂତିକୁ ଜାଣିବା ସହିତ, ଅଧ୍ୟୋଗତ ଓଡ଼ିଆଙ୍କ ଜାତ୍ୟାଭିମାନକୁ ଜାଗ୍ରତ କରିବା ସହିତ ବର୍ତ୍ତମାନର ଓଡ଼ିଆମାନେ ଅତୀତରେ ଗୌରବମୟ କାର୍ତ୍ତି ସ୍ମରଣରେ କିପରି ସଚେତନ ହେବ ।

Paper Code: ODIA C 402

4 Credit

100Marks

ଭାରତୀୟସାହିତ୍ୟରତୁଳନାତ୍ମକଅଧ୍ୟୟନ, ଅନୁବାଦ ଓ ସମ୍ପାଦନା କଳା

(Bharatiya Sahityara Tulanatmak Adhyayan, Anubada O Sampadana Kala)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ସାହିତ୍ୟର ତୁଳନାତ୍ମକ ଅଧ୍ୟୟନ ସମ୍ପ୍ରତି ସମଗ୍ର ବିଶ୍ୱର ଏକ ଆହ୍ୱାନକାରୀ ପ୍ରସଙ୍ଗ । ବିଶ୍ୱସାହିତ୍ୟ ବା ପ୍ରାଦେଶିକ ସାହିତ୍ୟ ସହିତ ଯୋଡ଼ି ହେବା ପାଇଁ ତୁଳନାତ୍ମକ ସାହିତ୍ୟ ଅଧ୍ୟୟନର ଆବଶ୍ୟକତା ରହିଛି । ତେଣୁ ଧର୍ମବୀରଭାରତୀଙ୍କ ‘କନୁପ୍ରିୟା’ ରମ୍ୟାକାନ୍ତ ରଥଙ୍କ ‘ଶ୍ରୀରାଧା’ ସହିତ ପ୍ରେମଚାନ୍ଦ ଓ ଫକୀରମୋହନଙ୍କ ସାହିତ୍ୟର ତୁଳନାତ୍ମକ ଅଧ୍ୟୟନ ଓ ଆକଳନ ଏହି ପତ୍ରର ଲକ୍ଷ୍ୟ ।

ଯୁନିଟ୍-୧: ତୁଳନାତ୍ମକ ସାହିତ୍ୟର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ଉପଯୋଗିତା(Tulanatmaka Sahityara Sangya, Swarupa, Upayogita)

ଯୁନିଟ୍-୨: ଓଡ଼ିଶାରେ ତୁଳନାତ୍ମକ ସାହିତ୍ୟ ଅଧ୍ୟୟନର ପରମ୍ପରା (Odishare Tulanatmaka Sahitya Adhyayanara Parampara)

(କ) ଗୋଦାନ ଓ ଛ'ମାଣଆଠଗୁଣ୍ଠ (ତୁଳନାତ୍ମକ ଅଧ୍ୟୟନ)

Godaana O Chhamana Athaguntha(Tulanatmaka Adhyayana)

ଯୁନିଟ୍-୩: ଅନୁବାଦର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ । ଅନୁବାଦ କ୍ଷେତ୍ରରେ ସମସ୍ୟା ଓ ସମାଧାନ

(Anubadara Sagyana, Swarupa O Prakarabheda, Anubada Kshetrare Samasya O Samadhana)

ଯୁନିଟ୍-୪: ସମ୍ପାଦନାର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ । ଗ୍ରନ୍ଥ ଓ ପତ୍ରପତ୍ରିକା ସମ୍ପାଦନାର ଧାରା

(Sampadanara Sangya, Swarupa O Prakarabheda, Grantha O Patra Patrika Sampadanara Dhara)

ନିଷ୍ପତ୍ତି (Course Outcome)

ସାହିତ୍ୟର ତୁଳନାତ୍ମକ ଅଧ୍ୟୟନ ଦ୍ୱାରା ଦେଶଦେଶ, ଜାତିଜାତି, ସଂସ୍କୃତି, ସାହିତ୍ୟ ମଧ୍ୟରେ ଥିବା ଭାବଗତ ସାମ୍ୟ, ବୈଷମ୍ୟ, ଆତ୍ମନିଷ୍ଠତାକୁ ଦୂରକରିବା ଏବଂ ମାନବ ସମାଜକୁ ଏକ ଓ ଅଭିନ୍ନ ଭାବରେ ପ୍ରତିପାଦନ କରିପାରିବା ।

Paper Code: ODIA C 403

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100Marks

ଓଡ଼ିଶାର ପ୍ରଦର୍ଶନଶୀଳ କଳା(Odishara Pradarshansheela kala)

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ମାନବ ସମାଜ ବା ଗୋଷ୍ଠୀ ବିଶେଷର ସମୂହିକ ଭାବଧାରାର ଏକ ଶୈଳିକ ପରିପ୍ରକାଶ ହେଲା ଲୋକକଳା । ଚିତ୍ରକଳା ଓ ପ୍ରଦର୍ଶନ କଳାଭେଦରେ ଏହା ଦ୍ୱିବିଧ । ଓଡ଼ିଶାରେ ପ୍ରଦର୍ଶନ ବିଭିନ୍ନ ପ୍ରଦର୍ଶନ କଳା ଯଥା-ପାଲା, ଦାସକାଠି, ପ୍ରହଲ୍ଲାଦ ନାଟ, ମୋଗଲତାମସା, ଦଣ୍ଡନାଟ ଇତ୍ୟାଦି ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀ ଅବଗତ ହେବା ସହିତ ଲୋକନାଟକର ଶୈଳୀ ଓ ଶିଷ୍ଟସଂସ୍କୃତିର ବିଷୟବସ୍ତୁ ବିଷୟରେ ଛାତ୍ରଛାତ୍ରୀ ଧାରଣା ଲାଭ କରିବେ ।

ଯୁନିଟ୍-୧: ପ୍ରହଲ୍ଲାଦନାଟ, ରାଧାପ୍ରେମଲୀଳା, ଦଣ୍ଡନାଟ (PrahalladaNata, RadhaapremaLeela, Dandanata)

ଯୁନିଟ୍-୨: ସଖୀନାଟ, ଦାସକାଠି, ଯାତ୍ରାନାଟ(Sakheenacha, Dasa Kathi, Jatra Nata)

ଯୁନିଟ୍-୩: ପଶୁମୁଖାନାଟ, ଛଉନାଟ, ଘୁମୁରାନାଟ(PashumukhaNacha, Chhaunacha, Ghumura Nacha, GhodaNacha)

ଯୁନିଟ୍-୪: ଡାଳଖାଇ, ମୋଗଲାତାମସା, କଣ୍ଢେଇନାଚ(Dalkhai, Mogalatamsa, KandheeNacha)

ନିଷ୍ପତ୍ତି (Course Outcome)

ପ୍ରଦର୍ଶନଶୀଳ କଳାରେ କିପରି ଧର୍ମୀୟ ଚିନ୍ତାଧାରା ରହିଛି ତାହା ଅବଗତ ହେବା ସହିତ ପୁରାଣର ଆଖ୍ୟାନ, ବିଷୟବସ୍ତୁ, ଚରିତ୍ର, ଗୀତ, ସଂଳାପ ଓ ବାଦ୍ୟ ତଥା ଲୋକ ଶୈଳୀତତ୍ତ୍ୱ ସମ୍ବନ୍ଧରେ ଜ୍ଞାନ ଆହରଣ କରିପାରିବେ ।

ସ୍ୱତନ୍ତ୍ରପତ୍ର(Special Paper)

A student is allowed to opt. for any one group from following 3 groups.

ଛାତ୍ରଟିଏ ତୃତୀୟ ସେମିଷ୍ଟରରେ ଯେଉଁ ସ୍ୱତନ୍ତ୍ର ପତ୍ର ନେଇଥିବ ତତୁପରି ସେମିଷ୍ଟରରେ ତାହାକୁ ସେହି ନିର୍ଦ୍ଦିଷ୍ଟ ସ୍ୱତନ୍ତ୍ରପତ୍ର ନେବାକୁ ହେବ ।

Group-A :ଲୋକସାହିତ୍ୟ(LokaSahitya)ODIA E 404 & ODIA E 405

Group-B :ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ(Madhyajugiya Sahitya) ODIA E 406 & ODIA 407

Group-C :ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti OdiaSahitya) ODIA E 408 & ODIA 409

ବିଭାଗ-କ(Group- A)

ଲୋକସାହିତ୍ୟ(Loka Sahitya)

Paper Code: ODIA E 404

4 Credit

100 Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଓଡ଼ିଆ ଲୋକସାହିତ୍ୟକୁ ସ୍ୱତନ୍ତ୍ର ପଦ୍ଧତୀରେ ଅଧ୍ୟୟନ କରୁଥିବା ଛାତ୍ରଛାତ୍ରୀମାନେ ଗ୍ରାମ୍ୟଜନତାଙ୍କୁ କେନ୍ଦ୍ରକରି ଯୁଗଯୁଗଧରି ଯେଉଁ ଏକ ସ୍ୱତନ୍ତ୍ର ସାହିତ୍ୟ ବିକାଶଲାଭ କରିଆସିଛି ସେ ସାହିତ୍ୟ ପ୍ରତି ଆତ୍ମସଚେତନ ହେବେ ।

ଯୁନିଟ୍-୧ : ଓଡ଼ିଆ ଲୋକସଂସ୍କୃତି, ଲୋକଚଳଣି, ଲୋକଜୀବନ (Odia LokaSanskriti, LokaChalani, Loka Jeebana)

ଯୁନିଟ୍-୨ : ଲୋକଧର୍ମ:ଓଷା-ବ୍ରତ-ମେଳା (Lokadharm:Osha-Brata-Mela)

ଯୁନିଟ୍-୩ : ଲୋକକ୍ରୀଡ଼ା, ଲୋକକଳା(LokaKreed, Lokakala)

ଯୁନିଟ୍-୪ : ଲୋକଦେବତା, ପର୍ବପର୍ବାଣୀ(Lokadebata, ParbaParbani)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଗ୍ରାମ୍ୟ ସଂସ୍କୃତିରେ ପ୍ରଚଳିତ ଥିବା ପର୍ବପର୍ବାଣି, ବ୍ରତ-ମେଳା-କ୍ରୀଡ଼ା, ଧର୍ମ ଆଦିର ଅନ୍ତଃପ୍ରକୃତି ଓ ରସସୌନ୍ଦର୍ଯ୍ୟକୁ ଜାଣିବା ସହିତ ନିଜକୁ ନୂତନ ଭାବେ ଆବିଷ୍କାର କରିବାର ସୌଭାଗ୍ୟ ଲାଭ କରିପାରିବେ ।

ଲୋକସାହିତ୍ୟ(LokaSahitya)

Paper Code: ODIA E 405

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ପଲ୍ଲୀଜୀବନ କର୍ମମୟ । କର୍ମ ମଧ୍ୟରେ ହେଉ ଅଥବା ଅବସର ମଧ୍ୟରେ ହେଉ ଲୋକଗୀତର ଧାରା ସରଳ ଓ ଅନାବିଳ । ପୁଣି ପଲ୍ଲୀସଙ୍ଗୀତଗୁଡ଼ିକ ଆପଣା ସ୍ୱତନ୍ତ୍ର ସୌନ୍ଦର୍ଯ୍ୟରେ କିପରି ନିତ୍ୟ ସୁଖମାମୟ ବିଦ୍ୟାର୍ଥୀମାନେ ତାହା ଜାଣିବାକୁ ପାଇବେ ।

ଯୁନିଟ୍ -୧ : ଲୋକଗୀତର ସଂଜ୍ଞା, ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ

(Lokageetara Sagya, Swarupa O Prakarabheda)

ଯୁନିଟ୍ -୨ : ଲୋକଗୀତର ସାମାଜିକ ଓ କଳାତ୍ମକ ଦିଗ

(Lokageetara Samajika O Kalatmaka diga)

ଯୁନିଟ୍ -୩: ଲୋକଗୀତର ମୌଳିକଗୁଣ, ପ୍ରେରଣା ଓ ଓଡ଼ିଆ ଲୋକଗୀତରେ ନାରୀ ଜୀବନ

(Lokageetara Maulika Guna,Prerana O Odia Lokageetare Naree Jeebana)

ଯୁନିଟ୍ -୪: ଲୋକୋକ୍ତି, ପ୍ରବାଦ, ପ୍ରବଚନ, ଢଗଢମାଳି

(Lokokti, Prabad, Prabachana, Dhagadhamali)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଲୋକଗୀତରେ ପ୍ରକୃତ ନୈସର୍ଗିକବାଣୀ ବିଦ୍ୟମାନ । ସମ୍ପ୍ରତି ଯେଉଁଠି ନଗର ସଭ୍ୟତା ପ୍ରବେଶ କରିପାରି ନାହିଁ ସେଠାରେ ନିଜ୍ଜଳ ଲୋକଗୀତର ମୂର୍ଚ୍ଛନା ଏବେବି ଦେଖିବାକୁ ମିଳେ । ଏହି ଗୀତଗୁଡ଼ିକୁ ସଂଗ୍ରହ କରିବା ସହିତ ଏହାର ବୈଶିଷ୍ଟ୍ୟ ସମ୍ବନ୍ଧରେ ଛାତ୍ରଛାତ୍ରୀ ଜ୍ଞାନଲାଭ କରିପାରିବେ ।

ବିଭାଗ-ଖ (Group-B)

ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ: କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ: କବି ଓ କାବ୍ୟ

(MadhyaJugiya Sahitya-Kabisamrat Upendra Bhanja: Kabi O Kabya)

Paper Code: ODIA E 406

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ ଧାରାର ଚରମବିକାଶର ସମ୍ପୂର୍ଣ୍ଣ ଦିଗବଳୟ ସମ୍ବନ୍ଧରେ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କଳ୍ପନାବିଳାସ ମୁଖରିତ ହେବା ସଙ୍ଗେସଙ୍ଗେ ବଳିଷ୍ଠ ଭାବଧାରା ସମ୍ବଳିତ କାବ୍ୟସାହିତ୍ୟର ଯେଉଁ ସୁଦୃଢ଼ ଭିତ୍ତିଭୂମି ଗଠନକଲେ ତାହା ଯୁଗବିପ୍ଳବର ବିକାଶ ଦିଗରେ ଆଲୋକିତ ହେଲା । ବିଦ୍ୟାର୍ଥୀମାନେ ତାହା ଜାଣିପାରିବେ ।

ଯୁନିଟ୍-୧: ସୁଭଦ୍ରାପରିଣୟ (୧ମ ଓ ୪ର୍ଥ ଛାନ୍ଦ)

SubhadraParinaya(1st & 4th Chhanda)

ଯୁନିଟ୍-୨: କୋଟିବ୍ରହ୍ମାଣ୍ଡସୁନ୍ଦରୀ (୧ମ ଓ ୬ଷ୍ଠ ଛାନ୍ଦ)

KotiBrahmandaSundaree(1st & 6th Chhanda)

ଯୁନିଟ୍-୩: ଉପେନ୍ଦ୍ର କାବ୍ୟର ଆଙ୍ଗିକ ଅନୁଶୀଳନ

(Upendra Kabhyara Angika Anushilana)

ଯୁନିଟ୍-୪: ଉପେନ୍ଦ୍ର କାବ୍ୟର ଆତ୍ମିକ ଅନୁଶୀଳନ

(Upendra Kabhyara Atmika Anushilana)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କାବ୍ୟକବିତା ଅଧ୍ୟୟନ ଫଳରେ ଉନ୍ନତ କଳ୍ପନାବିଳାସ, ଅନବଦ୍ୟ ରସାଳତା, ମନୋରଞ୍ଜନକାରୀ ଶୈଳୀ, ମନୋଜ୍ଞ ଅଳଙ୍କାର ପ୍ରୟୋଗ, ସାବଲୀଳ ପ୍ରକାଶ କୌଶଳ ବିଦ୍ୟଦର୍ଶିତା ଆଦି ବିଷୟରେ ଛାତ୍ରଛାତ୍ରୀ ଜାଣିପାରିବେ ।

ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ (ଉପେନ୍ଦ୍ରୋତ୍ତର ଓଡ଼ିଆ ସାହିତ୍ୟ) (Madhyajugiya Sahitya-Upendrottara Odia Sahitya)

Paper Code: ODIA E 407

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଓଡ଼ିଆ ମଧ୍ୟଯୁଗକୁ ବଳିଷ୍ଠ କରିଥିବା କବି ଅଭିମନ୍ୟୁ ବ୍ରଜନାଥ ବଡ଼ଜେନା, କବିସୂର୍ଯ୍ୟ ବଳଦେବ ରଥ ଓ ଗୋପାଳ କୃଷ୍ଣଙ୍କ କୃତିଗୁଡ଼ିକର ଅବଦାନ ସମ୍ପର୍କରେ ବିଦ୍ୟାର୍ଥୀମାନେ ଜ୍ଞାନଲାଭ କରିବେ ।

ଯୁନିଟ୍-୧: ବିଦଗ୍ଧ ଚିନ୍ତାମଣି (୧ମ ଓ ୩୦ତମ ଛାନ୍ଦ)- ଅଭିମନ୍ୟୁ ସାମନ୍ତସିଂହାର

(Bidagdha Chintamani(01 & 30 Chhanda)-Abhimanyu Samantsinghar)

ଯୁନିଟ୍-୨: ସମରତରଙ୍ଗ (୧ମ ଓ ୩ୟ ଛାନ୍ଦ)- ବ୍ରଜନାଥ ବଡ଼ଜେନା

(Samara Taranga (01 & 03Chhanda) -Brajanath Badajena)

ଯୁନିଟ୍-୩: କବିସୂର୍ଯ୍ୟ ବଳଦେବ ରଥ-ଗୀତ (Kabisurya Baladeb Rath-Geeta)

(କ) ଜଗତେ କେବଳ ଜନେ ହସିବେ(Jagate Kebala Jane hasibe)

(ଖ) କାହାକୁ କହିବା କପାଳରେ ସିନା କର ତାଡ଼ିବା (Kahaku kahiba kapalare sina kara tadiba)

(ଗ) ସର୍ପ ଜଣାଣ(Sarpa Janaana)

(ଘ) କ୍ଷୀରମୟ ସିନ୍ଧୁ ଜେମା ଜୀବବନ୍ଧୁ (Kheeramaya Sindhu JemaJeeba bandhu)

ଯୁନିଟ୍-୪: ଗୋପାଳକୃଷ୍ଣ ପଟ୍ଟନାୟକ- ଗୀତ (Gopalakrushna Pattnaik- Geeta)

(କ) ଉଠିଲୁ ଏଡ଼େ ବେଗି କାହିଁକିରେ(Uthilu ede begi kahinkire)

(ଖ)କି ନାଦରେ ପ୍ରାଣସଙ୍ଗିନୀ (Ki Nadare Pranasanginee)

(ଗ) ଶ୍ୟାମକୁ ଜୁହାର ତାର ପ୍ରେମକୁ ଜୁହାର(Shyamaku Juhara Tara Premaku juhara)

(ଘ) ଶ୍ୟାମ ଅପବାଦ ମୋତେ ଲାଗିଥାଉ(Shyama Apabada mote lagithau)

(ଙ) ମୁହାଁମୁହିଁ କିଶୋର ଚନ୍ଦ୍ରମାଙ୍କ ମୋର (MuhanMuhin Kishora Chandramankara mora)

ନିଷ୍ପତ୍ତି (Course Outcome)

ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟରେ ସଂସ୍କୃତ ଓ ପ୍ରାକୃତ ଭାଷାରେ ରଚିତ ସାହିତ୍ୟର ବିଧି, ସମରକାବ୍ୟ, ଚମ୍ପୂରଚନା ଶୈଳୀ ସହିତ ରାଧାକୃଷ୍ଣ ଚେତନାମୂଳକ କାବ୍ୟ ସମ୍ବନ୍ଧରେ ଛାତ୍ରଛାତ୍ରୀ ଅବଗତ ହେବେ ।

ବିଭାଗ-ଗ (Group-C)

ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti Odia Sahitya)

(ଉପନ୍ୟାସ ଓ କ୍ଷୁଦ୍ରଗଳ୍ପ)

Paper Code: ODIA E 408

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ ଅଧ୍ୟୟନ ବେଳେ ସାହିତ୍ୟରେ କିପରି ଶତାବ୍ଦୀର ବିବର୍ତ୍ତନ ତଥା ଅନୁବର୍ତ୍ତନ ଭିତରେ ଉଲ୍ଲଙ୍ଘନ ଆଦିମ ମଣିଷର ଜୀବନ ବୈଶିଷ୍ଟ୍ୟ ରୂପାୟିତ ହେଉଛି ତାହା ଜାଣିବା ସହିତ କ୍ଷୁଦ୍ରଗଳ୍ପର ଭାବ(Idea) ଓ କୌଶଳ ପୁଣି ଆଧୁନିକ ଲେଖକର ଭାଷା ଆଞ୍ଚଳିକ ପରିଧି ଓ ରୂପ ବୈଚିତ୍ର୍ୟ ସମ୍ବନ୍ଧରେ ଧାରଣା ପାଇପାରିବେ ।

ଯୁନିଟ୍-୧: ଯାଜ୍ଞସେନୀ – ପ୍ରତିଭା ରାୟ(Jagnyaseni-Pratibha Ray)

ଯୁନିଟ୍-୨: ଗଳ୍ପ (Galpa)

(କ)ସାରୀପୁତ୍ର – ସୁରେନ୍ଦ୍ର ମହାନ୍ତି(Sareeputta-Surendra Mahanty)

(ଖ)ଅଦିନବଉଳ – ଶାନ୍ତନୁକୁମାର ଆଚାର୍ଯ୍ୟ(Adina Baula-Shantanu Kumar Acharjya)

(ଗ)ଶୁଖିଲାପତ୍ର – ମନୋଜ ଦାସ(ShukhilaPatra-Manoj Das)

(ଘ)ସିଦ୍ଧାର୍ଥର ଉପକଥା -ଅଖିଳମୋହନ ପଟ୍ଟନାୟକ(Siddharthara Upakathaa – AkhilaMohana Pattanayaka)

(ଙ)ଭଙ୍ଗାଖେଳଣା– କିଶୋରୀଚରଣ ଦାସ((BhangaKhelana-KishoriCharan Das)

ଯୁନିଟ୍-୩ : ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କଥା ସାହିତ୍ୟର ରୂପ ଓ ଭାବବୈଚିତ୍ର୍ୟ

(Swadeenata Parabartee Odia Katha Sahityara Rupa O BhabaBaichitrya)

ଯୁନିଟ୍-୪ : ମୁକ୍ତୋପନ୍ୟାସ/ପ୍ରାୟୋପନ୍ୟାସ(Muktopanyasa/Prayopanyasa- Metafiction)

ନିଷ୍ପତ୍ତି (Course Outcome)

ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ସମୟରେ ଆତ୍ମପ୍ରକାଶ କରିଥିବା ଉପନ୍ୟାସର ଆତ୍ମକଥନଶୈଳୀ, ଗଠନକୌଶଳ, କ୍ଷୁଦ୍ରଗଳ୍ପର ପରୀକ୍ଷା, ଅନ୍ତର୍ନିହିତତା, ମୁକ୍ତୋପନ୍ୟାସ ଓ ପ୍ରାୟୋପନ୍ୟାସର ଗୁଣଧର୍ମ ସମ୍ପର୍କରେ ଛାତ୍ରଛାତ୍ରୀ ଅବଗତ ହେବେ ।

ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ(Swadhinata Parabarti Odia Sahitya)

(କବିତା ଓ ସମାଲୋଚନା)

Paper Code: ODIA E 409

4 Credit

100Marks

ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ (Aim of the Course)

ଆଧୁନିକ ଓଡ଼ିଆ କବିତା ନିର୍ଦ୍ଦିଷ୍ଟ ଭାବଭୂମି ନିର୍ମାଣରେ ଆଜିର କବି ପୁରୁଣା କବିତାର ଅସଂଖ୍ୟ ଶବ୍ଦ ଓ ପଦ ଅପେକ୍ଷା ନୂଆ ନୂଆ ଶବ୍ଦ ସଂଯୋଜନାରେ ନୂତନ ବ୍ୟଞ୍ଜନ ସୃଷ୍ଟି କରିପାରିଛନ୍ତି । ତୀର୍ଥ୍ୟକ ଅଭିବ୍ୟକ୍ତି, ବାକସ୍ମୂର୍ତ୍ତି, ରହସ୍ୟମୟତା ଓ ବିଭିନ୍ନବାଦଗୁଡ଼ିକ କିପରି ସାମ୍ପ୍ରତିକ କବିତାର ଅଂଶ ହୋଇଛି ଛାତ୍ରଛାତ୍ରୀ ତାହା ଏଠାରେ ଜାଣିବାକୁ ପାଇବେ ।

ୟୁନିଟ୍ –୧: ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କବିତାର ଆଜିକ ଓ ଆତ୍ମିକ ଅନୁଶୀଳନ(Swadeenata Parabartee Odia Kabitara Angika O Atmika Anusheelana)

ୟୁନିଟ୍ –୨: ଭାନୁମତୀର ଦେଶ – ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟ(Bhanumateera Desha–Sachidananda Rautaray)

ୟୁନିଟ୍ –୩: କବିତା(Kabita)

(କ) ଅଳକାସାନ୍ୟାଳ – ଗୁରୁପ୍ରସାଦ ମହାନ୍ତି(Alakasanyal-Guruprasad Mahanty)

(ଖ) ଚନ୍ଦ୍ରମାର ଚୂଡ଼ି- ରାମାକାନ୍ତ ରଥ(Chandramara Chudi–Ramakanta Rath)

(ଗ) ଏଇଥିପାଇଁ ତ ଆମେ ମଣିଷ – ସୀତାକାନ୍ତ ମହାପାତ୍ର(Eithipain ta ame Manisha- Seetakanta Mahapatra)

(ଘ) ଅନ୍ଧମହୁମାଛି – ସୌଭାଗ୍ୟ ମିଶ୍ର(AndhaMahumachhi–Saubhagya Mishra)

(ଙ)ଶୈଳକଳ୍ପ – ରାଜେନ୍ଦ୍ରକିଶୋର ପଣ୍ଡା(Shailakalpa–RajendraKishor Panda)

(ଚ) ନୀଳମାଧବ – ଦିଲ୍ଲୀପ ଦାସ(NeelaMadhaba–Dileep Das)

ୟୁନିଟ୍ –୪ : ଓଡ଼ିଆ କବିତାରେ ଉତ୍ତରଆଧୁନିକ ଚେତନା(OdiaKabitare Uttara Adhunika Chetana)

ନିଷ୍ପତ୍ତି (Course Outcome)

ଆଧୁନିକ ଓଡ଼ିଆ କବିତାରେ କିପରି ଜୀବନବୋଧର ଚିତ୍ର, ଗାନ୍ଧୀଦର୍ଶନ, ମାନବିକ ମୂଲ୍ୟବୋଧ, ମାନବର ସମ୍ପ୍ରତି, ଭୋକିଲା ମଣିଷର ଚିତ୍ର, ଆଦିବାସୀ ଜୀବନଚିତ୍ର ସହିତ ମିଥ୍ୟ, ଚିତ୍ରକଳ୍ପ, ପ୍ରତୀକ, ଗ୍ରାମ୍ୟସଂସ୍କୃତିର ଚିତ୍ର ବିଷୟାତ୍ମକ ହୋଇଛି ବିଦ୍ୟାର୍ଥୀମାନେ ତାହା ଜ୍ଞାନଲାଭ କରିପାରିବେ ।

Paper Code: ODIA AC 410

**Non-Credit
Add-On-Course**

Grade Point

Cultural Heritage of South Odisha(ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ବିଭବ) (To be taught in 4th Semester)

Aim of the Course (ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ)

Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as 'BHANJA BIHAR'. South Odisha is the adorable storehouse of literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha. (ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ମହାନାୟକ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ । ବ୍ରହ୍ମପୁର ବିଶ୍ଵବିଦ୍ୟାଳୟ ତାଙ୍କ ନାମରେ 'ଭଞ୍ଜବିହାର' ଭାବରେ ନାମିତ । ଗଞ୍ଜାମ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶା ସମଗ୍ର ରାଜ୍ୟର ବୁଧହଂସ କେଳିସର । ଏହାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-ଲୋକପରମ୍ପରା ସର୍ବଭାରତୀୟ ସ୍ଵୀକୃତି ପ୍ରାପ୍ତ । ଏହାକୁ ଦୃଷ୍ଟିରେ ରଖି ବ୍ରହ୍ମପୁର ବିଶ୍ଵବିଦ୍ୟାଳୟରେ ସ୍ନାତକୋତ୍ତର ଶ୍ରେଣୀର ସମସ୍ତ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାହିତ୍ୟିକ ପ୍ରତିଭା ଏବଂ ଏହି ଅଞ୍ଚଳର କଳା, ସଂସ୍କୃତି, ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ସାଧାରଣ ଧାରଣା ପ୍ରଦାନ କରିବା ପାଇଁ ଏପରି ଅଧ୍ୟୟନ ବ୍ୟବସ୍ଥା କରାଯାଇଛି ।)

This Paper consists of following 4 Units.

Details of the Course

ୟୁନିଟ୍-୧: କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କୃତି ଓ କୃତିତ୍ଵ (Literary works of Kabi Samrat Upendra Bhanja)

ୟୁନିଟ୍-୨: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାରସ୍ଵତ ସାଧକ (Other Litterateurs of South Odisha)

ୟୁନିଟ୍-୩: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ବିଭବ(Cultural Heritage of South Odisha)

ୟୁନିଟ୍-୪: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଆଦିବାସୀ ଓ ଲୋକ ପରମ୍ପରା (Folk and Tribal Traditions of South Odisha)

Course Outcome(ପାଠ୍ୟକ୍ରମର ନିଷ୍ପତ୍ତି)

The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale. (ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ଏହିପରି ଏକ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଦିଗରେ ପାଠଦାନ କରିବା ଦ୍ୱାରା କେବଳ ଯେ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ ଓ ଦକ୍ଷିଣ ଓଡ଼ିଶାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-ଆଦିବାସୀ ଲୋକ ଜୀବନ ଓ ଲୋକ ପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଛାତ୍ରଛାତ୍ରୀ ସଚେତନ ହୋଇପାରିବେ; ତାହା ନୁହେଁ, କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜଙ୍କ ସହିତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାହିତ୍ୟିକ ପରିମଣ୍ଡଳ ଏବଂ ଏହି ଅଞ୍ଚଳର ସାଂସ୍କୃତିକ ବିଭବ ଓ ଲୋକ ପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଛାତ୍ରଛାତ୍ରୀମାନେ ମଧ୍ୟ ସମ୍ୟକ ଜ୍ଞାନ ଆହରଣରେ ବ୍ରତୀହୋଇ ପାରିବେ ।)

[Irrespective of Arts, Science, Commerce & Mgmt. all 4 sem. P.G. students shall attend this class. i.e. ODIA AC 410. The faculty member of P.G. Dept. Odia will teach this Paper. Details about teaching will be notified letter on.]

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ନମୁନା ପ୍ରଶ୍ନ (Sample Question Pattern)

MA-ODIA-III S(E 307)

2022

Time: 3 hours

Full Marks: 80

Answer from both the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ

କ- ବିଭାଗ(Section A)

ଏହି ବିଭାଗରେ ସମସ୍ତ ଯୁନିଟରୁ ସଂକ୍ଷିପ୍ତ ପ୍ରଶ୍ନ ଦିଆଯିବ ।

୧। ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ଦିଅ । ପ୍ରତ୍ୟେକ ପ୍ରଶ୍ନର ଉତ୍ତର ୨/୩ ଧାଡ଼ି ମଧ୍ୟରେ ସୀମିତ ରହିବା ଆବଶ୍ୟକ । | ୨ X ୧୦

- କ) ଭୁବନେଶ୍ୱର ବେହେରାଙ୍କର ପଶ୍ଚିମ ଆଫ୍ରିକା ଯାତ୍ରାର ଉଦ୍ଦେଶ୍ୟ କ'ଣ ଥିଲା ?
ଖ) ପଶ୍ଚିମ ଆଫ୍ରିକାର ଜନପ୍ରିୟ ଖାଦ୍ୟ କ'ଣ ?
ଗ) 'ଶୁଣ ପରୀକ୍ଷ' କେଉଁ ଧରଣର ରଚନା ?
ଘ) 'ଶୁଣ ପରୀକ୍ଷ' ଗ୍ରନ୍ଥରେ ଭୁବନେଶ୍ୱର ବେହେରା କେଉଁମାନଙ୍କ କଥା କହିଛନ୍ତି?
ଙ) 'ଶୁଣ ପରୀକ୍ଷ'ର ରମ୍ୟ ପ୍ରବନ୍ଧ ମୁଖ୍ୟତଃ କେଉଁ ପଦ୍ଧିରେ ପ୍ରକାଶ ପାଇଥିଲା ?
ଚ) ସତ୍ୟନାରାୟଣ ରାଜଗୁରୁଙ୍କର ରଚିତ ଚାରିଗୋଟି ଗ୍ରନ୍ଥର ନାମୋଲ୍ଲେଖ କର ।
ଛ) ସତ୍ୟନାରାୟଣ ରାଜଗୁରୁଙ୍କର ବାଲ୍ୟାବସ୍ଥା କେଉଁଠି ଅତିବାହିତ ହୋଇଥିଲା ?
ଜ) 'ନୂଆ ମଣିଷ' କେଉଁ ଧରଣର ପ୍ରବନ୍ଧ ?
ଝ) 'ପୁଷ୍ପପୁରେ ବର୍ଷାବରଣ' କେଉଁ ଗ୍ରନ୍ଥର ଏକ ଅଂଶବିଶେଷ ?
ଞ) 'ଖର୍ବ ପୁରୁଷ' ପ୍ରବନ୍ଧରେ ପ୍ରାବନ୍ଧିକ ମାନବର କେଉଁ ଗୁଣ ସମ୍ପର୍କରେ ସୂଚନା ଦେଇଛନ୍ତି ?

ଖ- ବିଭାଗ(Section B)

ଏହି ବିଭାଗରେ ସମସ୍ତ ଯୁନିଟରୁ ନିମ୍ନ ଉଦାହରଣ ଅନୁଯାୟୀ ଦୀର୍ଘ ପ୍ରଶ୍ନ ଦିଆଯିବ ଓ ସମସ୍ତ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେବାକୁ ହେବ ।

ଯୁନିଟ୍ ୧

୨। ପଶ୍ଚିମ ଆଫ୍ରିକାର ଲୋକ ଜୀବନ ଭୁବନେଶ୍ୱର ବେହେରାଙ୍କର ଭ୍ରମଣ ବୃତ୍ତାନ୍ତ 'ପଶ୍ଚିମ ଆଫ୍ରିକାରେ ଓଡ଼ିଆ ଢେଙ୍କି' ଗ୍ରନ୍ଥରେ

କିପରି ପ୍ରକାଶ ପାଇଛି, ତାହା ଆଲୋଚନା କର । | ୧୫

କିମ୍ବା

କ) ଜଣେ ସଫଳ ଭ୍ରମଣ ବୃତ୍ତାନ୍ତର ରଚୟିତା ଭାବେ ଭୁବନେଶ୍ୱର ବେହେରାଙ୍କ କୃତିତ୍ୱ ବିଚାର । | ୭.୫

ଖ) ଓଡ଼ିଶା ଓ ପଶ୍ଚିମ ଆଫ୍ରିକାର ଲୋକ ସଂସ୍କୃତି ମଧ୍ୟରେ ତୁଳନା । | ୭.୫

ଯୁକ୍ତି ୨

୩ । ଓଡ଼ିଆ ଯୁବବର୍ଗଙ୍କୁ ଶିକ୍ଷିତ ଓ ସଚେତନ କରିବାରେ ‘ଶୁଣ ପରୀକ୍ଷା’ ଗ୍ରନ୍ଥର ଭୂମିକା ନିରୂପଣ କର । | ୧.୫

କିମ୍ବା

- କ) ଭାରତୀୟଶିକ୍ଷା ସମ୍ପର୍କରେ ଭୁବନେଶ୍ୱର ବେହେରାଙ୍କ ଦୃଷ୍ଟିଭଙ୍ଗୀ ସମ୍ପର୍କରେ ଆଲୋଚନା କର । | ୧.୫
ଖ) ଯୌବନକୁ ସ୍ଥିର ଓ ଶାନ୍ତ କରିବା ପାଇଁ ଭୁବନେଶ୍ୱର ବେହେରା ‘ଶୁଣ ପରୀକ୍ଷା’ ଗ୍ରନ୍ଥରେ ଯାହା ପ୍ରକାଶ କରିଛନ୍ତି, ତାହା ସଦୃଶ୍ୟାନ୍ତ ଆଲୋଚନା କର । | ୧.୫

ଯୁକ୍ତି ୩

୪ । ଓଡ଼ିଶାର ଐତିହାସ୍ୟ ଓ ପରମ୍ପରା ‘ମୋ ଜୀବନ ସଂଗ୍ରାମ’ ଗ୍ରନ୍ଥମଧ୍ୟରେ କିପରି ପ୍ରତିଫଳିତ ଆଲୋଚନା କର । | ୧.୫

କିମ୍ବା

- କ) ଐତିହାସିକ ସତ୍ୟନାରାୟଣ ରାଜଗୁରୁ । | ୧.୫
ଖ) ପ୍ରାବନ୍ଧିକ ଓ ପ୍ରତ୍ନତାତ୍ତ୍ୱିକ ସତ୍ୟନାରାୟଣ ରାଜଗୁରୁ । | ୧.୫

ଯୁକ୍ତି ୪

୫ । କୃଷ୍ଣଚନ୍ଦ୍ର ପାଣିଗ୍ରାହୀ ଓଡ଼ିଆ ସଂସ୍କୃତି ଓ ପରମ୍ପରାକୁ ନିଜର ପ୍ରବନ୍ଧ ମଧ୍ୟରେ କିପରି ପ୍ରକାଶ କରିଛନ୍ତି, ତାହା ଆଲୋଚ୍ୟ ‘ପୁଷ୍ପପୁରରେ ବର୍ଷାବରଣ’ ପ୍ରବନ୍ଧ ଭିତ୍ତିରେ ଆଲୋଚନା କର । | ୧.୫

କିମ୍ବା

- କ) ‘ନୂଆ ମଣିଷ’ ପ୍ରବନ୍ଧରେ ଶରତ କୁମାର ମହାନ୍ତି ଯେଉଁ ମଣିଷର କଥା ବ୍ୟାଖ୍ୟା କରିଛନ୍ତି, ତାହା ଆଲୋଚନା କର । | ୧.୫
ଖ) ‘ରାତି କେତେ ହେଲା’ ପ୍ରବନ୍ଧ ଭିତ୍ତିରେ ପ୍ରାବନ୍ଧିକଙ୍କ କୃତିତ୍ୱ ବିଚାର କର । | ୧.୫

**Choice-Based Semester System for P.G. Department of
Philosophy (2023-24)**

Berhampur University, Bhanja Bihar, Berhampur

Course No:

Name of the Course

SEMESTER-1

PHIL-C-101	PAPER- I INDIAN EPISTEMOLOGY
PHIL-C-102	PAPER-II: INDIAN METAPHYSICS
PHIL-C-103	PAPER-III: SYMBOLIC LOGIC
PHIL-C-104	PAPER-IV: POST-KANTIAN PHILOSOPHY
PHIL-C-105	PAPER-V: GREEK & MEDIEVAL PHILOSOPHY

SEMESTER-2

PHIL-C-201	PAPER-VI: WESTERN METAPHYSICS
PHIL-C-202	PAPER-VII: WESTERN EPISTEMOLOGY
PHIL-C-203	PAPER-VIII: WESTERN ETHICS
PHIL-C-204	PAPER-IX: INDIAN ETHICS
PHIL-C-205	PAPER-X: LINGUISTIC & CONCEPTUAL ANALYSIS

SEMESTER-3

PHIL-C-301	PAPER-XI: INDIAN SOCIAL AND POLITICAL PHILOSOPHY
PHIL-C-302	PAPER-XII: WESTERN SOCIAL AND POLITICAL PHILOSOPHY
PHIL-C-303	PAPER-XIII: CONTEMPORARY INDIAN THINKERS
PHIL-C-304	PAPER-XIV: RECENT WESTERN PHILOSOPHY
PHIL-C-305	PAPER-XV: META ETHICS

SEMESTER-4

PHIL-C-402

PAPER-XVI: RELIGIOUS PHILOSOPHY

PHIL-C-402

PAPER-XVII: PHILOSOPHY OF VEDANTA

PHIL-C-403

PAPER-XVIII: APPLIED ETHICS

PHIL-C-404

PAPER-XIX: RESEARCH METHODOLOGY

PHIL-C-405

PAPER-XX: DISSERTATION/ PROJECT

First Semester

Paper-I:

Indian Epistemology (PHIL-C-101)

Full Marks: 80+20

Unit-I

Cognition: Meaning and Nature, Division of Cognition: Prama &Aprama

Pramanas: Pratyaksa, Anumana

Unit-II

Upaman and Sabda

ArthapattiandAnupalabdhi

Unit-III

Pramanyavada: Pramanya / Apramanya(Svatah And Paratah)

Critique ofPramanyavada: Carvaka and Jayanta Bhatt

Unit-IV

Khyativadas (Theories of Error)

Basic Study Materials:

1. D.M.Datta, The Six Ways of Knowing
2. S.C.Chatterji, the Nyaya Theory of Knowledge
3. C.D.Sharma, A Critical Survey of Indian Philosophy
4. Jwala Prasad, History of Indian Epistemology
5. Swami Satprakashananda, Methods of Knowledge
6. B.Kar, Indian Theories of Error

Paper-II:
Indian Metaphysics
(PHIL-C-102)

Full Marks: 80+20

Unit-I

The Concept of Reality in the Upanisads, Jainism and Buddhism

Unit-II

The Concept of Reality in Samkhya, Vaisheshika and Vedanta (Samkhya and Ramanuja)

Unit-III

The Doctrines of Causality and Evolution: Satkaryavada, Asatkaryavada and Satkaranavada; Parinamavada and Vivartavada

Unit-IV

Theory of Liberation: Buddha, Samkhya, Samkhya and Ramanuja

Basic Study Materials:

1. S. Radhakrishnan, The Principal Upanisads
2. S. Radhakrishnan, Indian Philosophy, Vol. I & II
3. S.N. Dasgupta, History of Indian Philosophy, Vol. I & II
4. T.R.V. Murti, Central Philosophy of Buddhism
5. P.T. Raju, Spirit, Being and Self
6. Mahesh Chandra Bhartiya, Causation in Indian Philosophy
7. Sarbani Ganguli, A Critique of Causality

Paper-III:
Symbolic Logic
(PHIL-C-103)

Full Marks: 80+20

Unit-I:

The Sentential Connectives(Chapter 1)

Unit-II:

Sentential Theory of Inference (Chapter 2)

Unit-III:

Quantification theory (Chapter 3 & 4)

Unit-IV:

Set Theory (Chapter 9)

Text Book Recommended:Patrick Suppes, An Introduction To Symbolic Logic, Affiliated East-West Press, 1957.

Reference Books:

1. I.M. Copi, Symbolic Logic, 5th edition, Pearson Prentice Hall, Delhi, 1979.
2. Basic Study Materials: I.M. Copi and I. Cohen, An Introduction To Logic, Pearson, 2014.
3. Basson and O'Connor, Introduction To Symbolic Logic, The Free Press of Glencoe, 1960.
4. P.F. Strawson, Introduction to Logical Theory, London, 1952.

Paper-IV
Post-Kantian Philosophy
(PHIL-C-104)

Full Marks: 80+20

Unit-I

Hegel : Dialectic Method, Absolute Idealism

Bradley: Appearance and Reality, Theory of Truth.

Unit-II

Pragmatism: Theory of Knowledge and Truth

Logical Positivism: Elimination of Metaphysics, Verification Theory of Meaning

Unit-III

Existentialism: Jean Paul Sartre: Concept of Freedom, Bad Faith and Humanism

Phenomenology: Husserl's Epochal Reduction, Bracketing, Noema-Noesis

Unit-IV

Nietzsche: Will To Power, Critique of Enlightenment

Henri Bergson: Creative Evolution

Basic Study Materials:

1. C.E.M.Joad, Introduction to Modern Philosophy
2. D.M.Datta, Chief Currents of Contemporary Philosophy
3. W.T.Stace, Philosophy of Hegel
4. F.H.Bradley, Appearance and Reality
5. William James, Pragmatism
6. (Ed.) A.J.Ayer, Logical Positivism

7. Jean-Paul Satre, Existentialism and Humanism

8. Edmund Husserl, Phenomenology and the Crisis of Philosophy, (Tr.) Quentin Lauer

Paper-V

Greek & Medieval Philosophy

(PHIL-C-105)

Full Marks: 80+20

Unit- I

Pre-Socratic (Thales, Pythagoras, Parmenides, Heraclitus and Democritus)

Unit- II

Sophists: Epistemology and Morality.

Socrates: Dialectic Method, Ethical theory, Knowledge as Virtue.

Unit- III

Plato: Theory of Ideas, Concept of Soul.

Aristotle: Form and Matter, Causation, Actuality and Potentiality.

Unit- IV

Medieval Philosophy:

Thomas Aquinas: Concept of God, Proofs for the existence of God

St. Augustine: Theology, Doctrine of Man and Problem of Evil

Suggested Readings:

A History of Western Philosophy: Bertrand Russell

A Critical History of Greek Philosophy: W.T. Stace

Introduction to Western Philosophy: Anthony John Patrick Kenny

Second Semester
Paper-VI
Western Metaphysics (PHIL-C-201)

Full Marks: 80+20

Unit-I

The Conceptions of Reality: Monism, Dualism and Pluralism

Unit-II

Problem of Substance, Problem of Universals, Problem of Space and Time

Unit-III

Critique of Metaphysics (Empiricist, Logical Positivist and Logical Atomist)

Unit-IV

Problems concerning Body and Mind relationship

Basic Study Materials:

1. D.W.Hamlyn, Metaphysics
2. Richard Taylor, Metaphysics
3. G.W.Patrick, An Introduction to Philosophy
4. G.T.W. Cunningham, Problems of Philosophy
5. (Ed.) David Halis, Metaphysics: Contemporary Readings
6. C.DennetandHofstades, Mind's I
7. David Chalmers, Self and It's Brain
8. Gilbert Ryle, The Concept of Mind
9. John Hospers, An Introduction to Philosophical Analysis

10. (Ed.) John Hospers, Readings in Introductory Philosophical Analysis

Paper-VII
Western Epistemology
(PHIL-C-202)

Full Marks: 80+20

Unit-I

Problems of Knowledge: Plato's Theory of Knowledge, Belief and Opinion;

A.J.Ayer's skepticism;

Gettier's: "Is Justified True Belief Knowledge?"

Unit-II

Conceptions of Truth: Correspondence, Coherence, Pragmatic and Semantic

Unit-III

Problems concerning Perceptual Knowledge and Problems concerning Memory

Unit-IV

Problem of Induction, Naturalized Epistemology, Internalism and Externalism

Basic Study Materials:

1. A.D.Woozley, Theory of Knowledge
2. Noah Lemos, An Introduction to the Theory of Knowledge
3. R.M.Chisolm, Theory of Knowledge
4. D.M.Armstrong, Belief, Truth and Knowledge
5. A.J.Ayer, The Problem of Knowledge
6. A.C.Danto, Analytical Philosophy of Knowledge

7. Paul Newall, An Introduction to Epistemology
8. Jonathan Dancy, An Introduction to Contemporary Epistemology
9. Edmund Gettier, "Is Justified True Belief Knowledge?"

Paper-VIII

Western Ethics

(PHIL-C-203) Full Marks: 80+20

Unit –I

Concepts of Good, Right, Moral Obligation, Cardinal and Customary Virtues, Eudaemonism, Intuitionism.

Unit-II

Egoism, Altruism, Universalism, Subjectivism, Cultural Relativism, Supernaturalism.

Unit-III

Kant's Moral Theory: Postulates of Morality, Good-Will, Categorical Imperative, Duty, Means and Ends, Maxims of Morality

Unit-IV

Utilitarianism: Principle of Utility, Problem of Sanction and Justification of Morality, Kinds Of Utilitarianism, Moral Theories of Bentham, J. S. Mill and Sidgwick

Basic Study Materials:

1. William Lilly, An introduction to Ethics
2. Jadunath Sinha , A Manual of Ethics 3

3. Mackenzie, J, Manual of Ethics.

4. Frankena, William, Ethics

Paper-IX

Indian Ethics

(PHIL-C-204)

Full Marks: 80+20

Unit-I

Indian Ethics: Nature and Pre-suppositions.

Purusarthas: The Hierarchy of Values

Unit-II

Dharma and Classification of Dharma: Svadharma, Paradharma, Varnashrama
Dharma and Sadharana Dharma

Unit-III

Ethics of Jainism: Triratnas, Anuvratas, Mahavratas

Ethics of Buddhism: Four Noble Truths, Eight-fold Path, Panchsila, Brahma
Viharas.

Unit-IV

Gandhian Ethics: Truth and Non-violence, Means and Ends, Seven Sins.

Ethics of Bhagavadgita: Types of Karma, Niskamakarma, Lokasangraha

Basic Study Materials:

1. S.K.Maitra, Ethics of the Hindus

2. M. Hiriyanna, The Indian Conception of Values

3. Surama Dasgupta, Development of Moral Philosophy in India

4. I.C.Sharma, Ethical Philosophies of India
5. Rajendra Prasad, Varnadharmā, Niskamakarmā and Practical Morality
6. P. De Silva, "Buddhist Ethics in " A Companion to Ethics, Ed. Peter Singer
7. H. S- Prasad, the Centrality of Ethics in Buddhism: Exploratory Essays
8. SrimadBhagbad Gita

Paper-X

Linguistic and Conceptual Analysis

(PHIL-C-205)

Full Marks: 80+20

Unit-I

G. Frege: "On Sense and Reference"

Moore: A Defense of Common sense.

Unit-II

B. Russell: "Descriptions"

P.F.Strawson: "On Referring"

Unit-III

A.J.Ayer: The Verification Principle

W.V.O. Quine: "Two Dogmas of Empiricism"

Unit-IV

J.L.Austin: Speech Act Theory

L. Wittgenstein: Meaning and Use

Basic Study Materials:

1. Alexander Miller, *Philosophy of Language*, Routledge, 1998.
2. A. P. Martinich (Ed.) *the Philosophy Of Language*, Oxford University Press, 1990.
3. Michael Beaney (Ed.), *the Frege Reader*, Blackwell, 1997
4. A.J. Ayer, *Language, Truth and Logic*, Penguin, 1971.
5. J. L. Austin, *How to Do Things with Words*, Oxford University Press, 1983
6. J. L. Austin, *Philosophical Papers*, Oxford University Press, 1979.
7. L. Wittgenstein, *Philosophical Investigations* (Tran.) G.E.M. Anscombe, Basil Blackwell, 1953.
8. G. Pitcher, *the Philosophy Of Wittgenstein*, Prentice-Hall, 1985
9. John Passmore: *A Hundred Years of Philosophy*, London, 1957.
10. A.J. Ayer (Ed.), *the Revolution In Philosophy*, London, 1956.
11. R.C. Pradhan, *Recent Developments in Analytic Philosophy*, Icpr, 2001. 12. Richard Heck & Robert May,
12. *Frege's Contribution to Philosophy of Language*

Third Semester
Paper-XI
Indian Social and Political Philosophy
(PHIL-C-301)

Full Marks: 80+20

Unit- I

Mahabharata: Rajadharma, Law and Governance, Danda-niti,

Unit-II

Kautilya: Sovereignty, Seven Pillars of State-Craft, State, Society, Social- life, State Administration, State Economy, Law and Justice, Welfare

Unit-III

Constitutional Morality, Secularism And Fundamental Rights , Constitutionalism, Total Revolution, Terrorism , Svadeshi, Satyagraha, Sarvodaya, Social Democracy , State Socialism, Affirmative Action, Social Justice.

Unit-IV

Social Institutions: Family, Marriage, Property, Education & Religion

Basic Study Materials:

1. O.P. Gauba, Social and Political Philosophy
2. V.P.Varma , Ancient and Medieval Indian Political Thought
3. V.R. Mehta , Indian Political Thought
4. Himansu Roy, Indian Political Thought: Theme and Thinker

Paper-XII

Western Social and Political Philosophy

(PHIL-C-302)

Unit - I

Plato: Ideal State and Justice

Aristotle: Critique of ideal state, General Theory of State, Government and Citizens

Unit -II

Social Contract Theory: Locke, Hobbes & Rousseau

Unit -III

Isaiah Berlin: Two Concepts of Liberty

Bernard Williams: Idea of Equality

Unit -IV

The Concept of Justice: Distributive Justice of Locke, Nozick, Marx, Justice as Fairness of John Rawls

Basic Study Materials:

1. George H Sabine : A History of Political Theory
2. J. P. Suda : History of Political Theory
3. Western Political Philosophy, Volume 1, 3 & 4
4. Aristotle , The Politics
5. A. Skoble and T. Machan , Political Philosophy: Essential Selections
6. O.P. Gauba, An Introduction to Political Theory

Paper-XIII
Contemporary Indian Thinkers
(PHIL-C-303)

Full Marks: 80+20

Unit-I

Iqbal - Self, God, Man and Superman.

Unit II

K.C. Bhattacharyya - Concept of Philosophy, Subject as Freedom, Doctrine of Maya.

Unit-III

J. Krishnamurti - Freedom from the Known, Analysis of Self, Human crisis.

Unit-IV

Ambedkar - Varna and the Caste System

A.P.J. Abdul Kalam - Ethics, Education and Metaphysics

Basic Study Materials:

1. Madhusudan Reddy, Sri Aurobindo's Philosophy of Evolution
2. S.K. Maitra, an Introduction To The Philosophy Of Sri Aurobindo
3. J.L. Shaw, Practical Vedanta: Swami Vivekananda As A Philosopher
4. T.M. P. Mahadevan, And G.V. Saroja, Contemporary Indian Philosophy,
5. Lal, B.K., Contemporary Indian Philosophy, Motilal Banarsidass Publishers.

Paper-XIV

Recent Western Philosophy

(PHIL-C-304)

Full Marks: 80+20

Unit-I

Wittgenstein: Language and Reality, Facts and Objects, Names and Proposition.

Unit-II

Gilbert Ryle: Systematically Misleading Expressions, Category Mistake, Concept of Mind, Critique of Cartesian Dualism

Unit-III

H.P. Grice and P.F. Strawson: In Defense of Dogma

John Wisdom: Philosophy and Psycho Analysis

Unit-IV:

Russell: Logical Atomism & Refutation of Idealism

Basic Study Materials:

N.P. Tiwary, Contemporary Western Philosophy

A. C. Grayling , The History of Philosophy

Anthony Kenny , A New History of Western Philosophy

Paul Kleinman , Philosophy 101

Paper-XV

Meta Ethics

(PHIL-C-305)

Full Marks: 80+20

Unit-I

Meta ethical Theories: Cognitivism And Non-cognitivism, Ethical Realism and Intuitionism

Unit-II

Metaethical Theories: Universalism, Relativism and Moral Nihilism

Unit-III

Emotivism (Ayer, Stevenson), Prescriptivism (R.M.Hare)

Unit-IV

Immanuel Levinas : Ethics as a First Philosophy, Philosophy of 'the other'

Basic Study Materials:

1. Aristotle, The Nicomachean Ethics
2. I. Kant, Critique of Practical Reason
3. J.S Mill, Utilitarianism
4. Shelly Kegan, Normative Ethics
5. William K.Frankena, Ethics
6. Bernard Williams, Ethics and the Limits of Philosophy
7. L.M. Hinman, Ethics: A Pluralistic Approach to Moral Theory
8. Samuel Scheffler, Consequentialism and its Critics
9. Hare, R.M., Language of Morals

Fourth Semester
Religious Philosophy
(PHIL-C-401)
Paper-XVI

Full Mark: 80+20

Unit-I

What is Religion? Definition and Interpretation of Religion, Religion without God, Religion and Morality.

Philosophy of Religion: Nature and Scope, Critical Approach to Religious ideas.

Unit-II

Proofs for the Existence of God: Ontological, Cosmological, Teleological and Moral.

Problem of Evil.

Unit-III

Reason, Revelation, Faith and Belief, Voluntarist Theories of Faith.

Religious Language: Cognitivist and Non-cognitivist

Unit-IV

Religious Pluralism, Unity of Religions, Inter-religious dialogue, Secularism, Proselytisation.

Basic Study Materials:

1. Y. Masih, A Comparative Study of Religions
2. K.Om Narayana Rao, Philosophy of Religion, Kalyani Publishers.
3. John Westerdale Bowker, World Religions: The Great Faiths Explored and Explained

4. Huston Smith, The World's Religions
5. Daniel L Pals, Eight Theories of Religion
6. Robert A. Segal, the Blackwell Companion to the Study of Religion
7. John Hick, Philosophy of Religion

Paper-XVII
Philosophy of Vedanta
(PHIL-C-402)

Full Marks: 80+20

Unit-I

Shankara Vedanta: Brahman, Atman, Isvara, Jiva, Maya, Bondage and Liberation

Unit-II

Ramanuja Vedanta: Visistadvaita, Isvar, Cit (Individual Soul) and Acit, Bondage and Liberation

Unit-III

Madhva Vedanta: Dvaitavada, Conception of Cit (Individual Soul) and Acit.

Nimbarka Vedanta: The Conception of Dvaitadvaita / Svabhavika-

Bhedabheda

Unit-IV

Vallabha Vedanta: The Conception of Shuddhadvaita, Achintyabhedabheda of Sri Chaitanya, Pratyabhijna of Kashmir Shaivism

Basic Study Materials:

1. C.D. Sharma, A Critical Survey of Indian Philosophy
2. S. Radhakrishnan, Indian Philosophy, Vol. 1 and 2

3. M. Hiriyanna, Outlines of Indian Philosophy

4. T.M.P. Mahadevan , The Philosophy of Advaita Vedanta

Paper-XVIII

Applied Ethics

(PHIL-C-403)

Full Marks: 80+20

Unit- I

About Ethics, Environment And Man: Anthropocentric, Bio Centric And Eco-Centric Views,

Shallow and Deep Ecology, Ethicsof Care.

Unit- II

Business Ethics: Ethics of Profit , Advertisement in Business , Corporate Social Responsibility

Unit- III

Sanctity of Life: Abortion, Euthanasia

Doctor- Patient Relationship,

Genetic Engineering and Cloning.

Unit- IV

Animal Rights, Media Ethics andEco-Feminism.

Suggested Readings:

Singer, P., Practical Ethics (Cambridge Univ. Press)

Blackwell Companions to Philosophy, A Companion to Ethics, Edited By Peter Singer

Beauchamp, T.L., Leroy Walters, Contemporary Issue in Bioethics, Wadsworth Publishing Company, 1989.

Almond, Brenda (Ed.), Introducing Applied Ethics, Blackwell, UK

Supplementary Readings:

Evans, J.D.G., Moral Philosophy and Contemporary Problems

Rachels, James (Ed.). Moral Problems (Third Ed) 1979, Harper & Row

Beauchamp, T.L., Principle of Biomedical Ethics

Fox, R. & Marco, J.De, New Directions in Ethics, Routledge & Kegan Paul

Rao, K.Om Narayana, Introduction to Applied Ethics, Kalyani Publishers.

Cohen, M and Nagel, T., War and Moral Responsibility, Princeton

Dennett, J.C., Nuclear Weapons and the Conflict of Conscience (OUP)

Russell, B., Common Sense and Nuclear Warfare, Penguin

Hayward. T., Ecological Thought, Polity Press, UK

Thirox, J.P., Ethics: Theory and Practice (Glencoe Pub. Co. Inc., California

Velasquez, Manuel, G., Business Ethics: Concept and Cases, Pearson

Paper-XIX

Research Methodology

(PHIL-C-404)

Full Marks: 80+20

Unit- I

Research Methodology (General): Meaning and types. Methods, Techniques and Style Sheets.

Unit-I

Hypothesis: Types of hypothesis. Conditions of legitimate hypothesis, Proofs of hypothesis.

.

Unit- III

Research Design, Types of Research and Philosophical World-views (Qualitative, Quantitative and Mixed Approaches).

Unit –IV

Methods of Philosophy: Traditional (Socratic Dialogue, Hegelian Dialectics, Husserlian Epoche, Cartesian Method of Doubt, Marxian Dialectic, Kantian Transcendental Method).

Contemporary (Radical Interpretation, Naturalism, Commonsense Philosophizing, analytical method, experimental philosophy, thought experiments).

Suggested Readings:

1. Blakie, Norman, 1993, Approaches to Social Enquiry, Cambridge: Polity Press.
2. Creswell, John, 2011, Research Design, Qualitative, Quantitative and Mixed Methods Approaches, 3rd edition, Sage Publications India Pvt. Ltd.
3. 3. Daly, Chris, 2010, An Introduction to Philosophical Methods, Broadview Press Ltd.
4. Kothari, C.R and Garg, Gaurav, 2014, Research Methodology, Methods and Techniques, 3rd edition, New Age International Publishers, New Delhi.
5. Papazoglou, Alexis, ed. 2012, The Pursuit of Philosophy: Some Cambridge Perspectives, Blackwell Publishers.
6. Ramachandra, T.P., 1984, Methodology of Research in Philosophy, University of Madras, Chennai.

Paper-XX

Full Marks: 100

Dissertation / Project.

(PHIL-C-405)

The Project Shall Be Evaluated By An External And Internal Examination.

Writing of Project or Dissertation = 70 Marks

Viva Voce = 30 Marks

BERHAMPUR UNIVERSITY
P.G Syllabus For Political Science



(2-Years P.G Programme)

P.G. DEPARTMENT OF POLITICAL SCIENCE BERHAMPUR UNIVERSITY,
BERHAMPUR-760007

2022-23

COURSE PLAN:

For pursuing M.A. Course in Political Science a student shall have to study twenty courses /papers evenly distributed covering four semesters for a period of two years. All the courses in the First and Second semesters are compulsory courses. In the Third Semester there is a choice based open course (**Course No.300, CBCT**) and any student from other disciplines can opt. for the course provided s/he is a student of the corresponding semester. Course No. 301(A) and (B), 302(A) and (B), 303(A) and (B) and 304(A) and (B) in the Third Semester are Elective/Optional Courses and a student can opt. any one out of alternatives. Courses No.401 (A) and (B), 402 (A) and (B) and 403(A) and (B) in the Fourth Semester are Elective/Optional Courses and a student can opt. any one out of the alternatives. Core Courses No .404 and 405 in Fourth Semester are Research Methodology and Project Work respectively. PSC 206 and 305 are Value Added Courses PSC 406 is an Add on Course.

PROGRAAMMEE OUTCOME:

M.A. in Political Science is a two years regular course. It follows an interdisciplinary approach to the study politics as it draws concepts and ideas from other disciplines like history, sociology, psychology, economics, anthropology and biology. Thus, the purpose of this course is to help the students to have an understanding of various interdisciplinary concepts, theories, ideological discourses, perspectives, political behavior, policy issues, and structures of government within societies and among nations. It equips students with the knowledge of different political systems and institutions in the world and to make them aware of different administrative principles and the paradigm shift in Public Administration. The study of political values, ideas and philosophy enshrined in the constitution of India will help them develop their political orientation which in turn will make them an active, obedient and responsive citizen. Students will also be made conscious of the social, cultural, economic and political environment that affects politics in India, at both national as well as regional level. Students will be equipped with the fundamental understanding of political philosophy as theorised by different thinkers. Students will be able to understand what power is, its different dimensions as well as its location in social and political context, know various issues of international and domestic politics; analyze political and policy problems; demonstrate critical thinking including the ability to form an argument, to detect fallacies; deliver thoughtful and well articulated presentations of research findings. This course also makes the students aware on various aspects of teaching, learning, research and plagiarism. In its broader perspective this course emphasises on contemporary issues and problems to make the subject more socially relevant and very near to the realities of public life.

M.A POLITICAL SCIENCE
Course Structure (2022-23)

Semester-I						
Paper Code	Paper	Credits	Core/ Elective	Int. Marks	Ext Marks	Marks
PSC C 101	POLITICAL THEORY	4	Core	20	80	100
PSC C 102	INDIAN GOVERNMENT AND POLITICS	4	Core	20	80	100
PSC C 103	THEORIES OF INTERNATIONAL RELATIONS	4	Core	20	80	100
PSC C 104	PUBLIC ADMINISTRATION	4	Core	20	80	100
PSC C 105	WESTERN POLITICAL THOUGHT-I	4	Core	20	80	100
		20				500
Semester-II						
Paper Code	Paper	Credits	Core/ Elective	Int. Marks	Ext Marks	Marks
PSC C 201	POLITICAL SOCIOLOGY	4	Core	20	80	100
PSC C 202	COMPARATIVE POLITICAL ANALYSIS	4	Core	20	80	100
PSC C 203	CONTEMPORARY ISSUES IN INTERNATIONAL RELATIONS	4	Core	20	80	100
PSC C 204	ADMINISTRATIVE THEORY	4	Core	20	80	100
PSC C 205	WESTERN POLITICAL THOUGHT-II	4	Core	20	80	100
PSC VAC- 206	HUMAN RIGHTS IN INDIA: CONCEPT AND PRACTICE	--	Non- Credit	20		Grade
TOTAL		20	20			500
Semester-III						
Paper Code	Paper	Credits	Core/ Elective	Int. Marks	Ext Marks	Marks
PSC E- 301(A)	INDIAN POLITICAL THOUGHT	4	Elective	20	80	100
PSC E- 301(B)	POLITICAL PROCESSES IN INDIA	4	Elective	20	80	100
PSC E- 302(A)	INDIA'S FOREIGN POLICY	4	Elective	20	80	100
PSC CE- 302(B)	INTERNATIONAL RELATIONS OF SOUTH ASIA	4	Elective	20	80	100
PSC E- 303(A)	PUBLIC POLICY AND GOVERNANCE	4	Elective	20	80	100

PSC E-303(B)	SOCIAL EXCLUSION AND INCLUSIVE POLICY	4	Elective	20	80	100
PSC E-304(A)	POLITICAL IDEOLOGIES	4	Elective	20	80	100
PSC E-304(B)	CRITICAL TRADITIONS IN POLITICAL THEORY	4	Elective	20	80	100
PSC CT-300	INDIAN POLITICAL SYSTEM (CBCT)	4	CBCT	20	80	100
PSC VAC-305	FEMINISM: THEORIES AND PRACTICES	--	Non-Credit	--	--	Grade
		20	--	100	400	500
Semester-IV						
Paper Code	Paper	Hours Per Week	Credits	Int. Marks	Ext Marks	Marks
PSC E-401(A)	NEW SOCIAL AND POLITICAL MOVEMENTS IN INDIA	4	Elective	20	80	100
PSC E-401(B)	LOCAL GOVERNMENT AND POLITICS IN INDIA	4	Elective	20	80	100
PSC E-402(A)	FOREIGN POLICY OF MAJOR POWERS	4	Elective	20	80	100
PSC E-402(B)	INDIA AND REGIONAL ORGANIZATIONS		Elective	20	80	
PSC E403(A)	STATE POLITICS IN ODISHA	4	Elective	20	80	100
PSC E403(B)	POLITICAL ECONOMY AND DEVELOPMENT ADMINISTRATION IN ODISHA	4	Elective	20	80	100
PSC C-404	RESEARCH METHODOLOGY	4	Core	20	80	100
PSC C-405	DISSERTATION AND VIVA-VOCE	4	Core	20	80	100
PSC406 AC	CULTURAL HERITAGE OF SOUTH ODISHA (ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସଂସ୍କୃତିକବିଭବ)	--	Non-Credit	--	--	Grade
				100	400	500
Grand Total		---	---	400	1600	2000

SEMESTER –I

PSC C 101: POLITICAL THEORY

Sub. Code:	Subject Name	Credit	Internal Marks	External Marks=80
PSC C 101	POLITICAL THEORY	04	20	80

Objectives: This course has been designed to provide students an introduction to the fundamental concepts in political theory. It begins with an overview of why we study political theory and what are the approaches and forms of political theory. It then proceeds to elaborate in a detailed manner on the key concepts of 'Liberty', 'Equality', 'Rights', 'Justice', 'Democracy'. It will also focus on recent trends of Political Theory. Each concept is explained through the thoughts and writings of noted theorists who have deliberated in length on that particular issue with emphasis given on readings of original writings.

Detailed Syllabus

Units	Topic	Hours
Unit-I Understanding Political Theory	Meaning, Nature, Scope and Evolution, Function, Significance, Approaches to the Study of Political Theory, A debate on the Decline and Resurgence of Political Theory.	13
Unit-II Key Concepts	1. Liberty: Freedom as Emancipation and Development, Freedom of belief, expression and dissent 2. Equality: a) Contestations on Equality b) Equality of Treatment vs. Treatment as equals c) Equality of Resources and Outcomes. 3. Rights: a) Theories of Rights. b) Group based vs. Individual Rights c); Human Rights 4. Justice: a) Justice as Fairness- John Rawls b) Justice as Entitlement- Robert Nozick, Amartya Sen c) Justice as Embedded- Michael Sandel, Iris Young	13
Unit-III Political Theory and Practices	Democracy: a) Representative b) Participatory c) Deliberative d) Procedural e) Substantive	13
Unit-IV Recent Trends	Modernism and Post-Modernism a) Deconstruction b) Post Structuralism c) Critical Theory	13
	Total	52

Suggested Readings:

1. Bhargava, Rajeev, and Acharya, Ashok *Political Theory: An Introduction*, New Delhi: Pearson Longman, 2008
2. Farrelly, Colin, *Contemporary Political Theory, A Reader*, Sage Publications, 2003
3. Vinod, M.J. and Deshpande Meena, *Contemporary Political Theory*, PHI Learning Private Limited, Delhi, 2013
4. Adams Ian, *Political Ideologies Today*, Manchester, Manchester University Press, 1993
5. Bajpai, U.S.(ed), *Nonalignment: Perspective and Prospects*, New Delhi; 1983
6. Goodin, Robert E. and Philip Pettit edited *Contemporary Political Philosophy*, Oxford, Blackwell Publishers, 1997.
7. Graham, Gordon, *Politics in its Place- A Study of Six Ideologies*, Oxford, Clarendon Press, 1986
8. Hampton, Jean, *Political Philosophy: An Introduction*, Delhi, Oxford University Press, 1998.
9. Harrison, Ross, *Democracy*, London, Routledge, 1993.

10. Heywood , Andrew, *Political Ideologies*, London, Macmillan, 1992
11. Berlin, Isaiah, *Four Essays on Concepts of Liberty*, Oxford, Oxford University Press, 1969.
12. Miller, David and Larry Siedentop (edited) *The Nature of Political Theory*, Oxford, Clarendon Press, 1983.
13. Rawls, John, *A Theory of Justice*, Oxford, Oxford University Press, 1971.
14. Rawls, John, *Political Liberalism*, New York, Columbia University Press, 1993.
15. Sandel, Michael, *Liberalism and The Limits of Justice*, Cambridge Mass, Cambridge University Press, 1982.
16. Okin, Susan Moller, Justice, *Gender and the Family*, New York, Basic Books, 1989.

PSC C 102: INDIAN GOVERNMENT AND POLITICS

Sub. Code	Subject Name	Credit	Internal Marks	External Marks
PSC C 102	INDIAN GOVERNMENT AND POLITICS	04	20	80

Objectives: This course acquaints students with the constitutional design of state structures and institutions, and their actual working over time. The Indian Constitution accommodates conflicting impulses of liberty and justice, territorial decentralization and a strong union, for instance within itself. The course traces the embodiment of some of these conflicts in constitutional provisions, and shows how these have played out in political practice. It further encourages a study of state institutions in their mutual interaction, and in interaction with the larger extra-constitutional environment.

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Making of the Indian Constitution: Constituent Assembly, Background, Composition, Nature and its working.	13
Unit-II	Ideological basis of the Indian Constitution: Preamble, Fundamental Rights & Duties and Directive Principles.	13
Unit-III	Structure and Process of Union Government: Executive: President and Prime Minister, Council of Minister Legislature: Parliament of India, Judiciary: Supreme Court	13
Unit-IV	Federalism: Federal in Form and Unitary in Spirit, Areas of Conflict in Centre- State Relations: Administrative, Financial and Legislative Relations. Recent Trends in Centre- State Relation	13
	Total	52

Suggested Reading:

1. Austin, Granville, *The Indian Constitution: Cornerstone of a Nation*, New Delhi, OUP, 1972
2. Austin, Granville, *Working a Democratic Constitution: The Indian Experience*, New Delhi, OUP, 1999
3. Basu, D.D., 1999, *Introduction to the Constitution of India*, Calcutta, Prentice Hall (latest edition)
4. Hasan, Zoya, Shridharan, E. and Sudarshan, R., (edited.), *India's Living Constitution*, New Delhi, Permanent Black, 2002
5. Kapur, Devesh and Mehta, Pratap Bhanu (eds.), *Public Institutions in India*, New Delhi,

- OUP, 2005,
6. Saez Lawrence, *Federalism without a Center*, New Delhi, Sage, 2004
 7. Sathe S.P., *Judicial Activism*, New Delhi, OUP, 2002
 8. Sharma Brij Kishor, *Introduction to the Constitution of India*, New Delhi, Prentice Hall, 2002,
 9. Choudhary Sujit and Khosla Madhav, *The Oxford Handbook of the Indian Constitution*, New Delhi, OUP, 2016

PSC C- 103: THEORY OF INTERNATIONAL RELATIONS

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
PSC C- 103	THEORY OF INTERNATIONAL RELATIONS	4	20	80
Objectives	<p>The basic objective of this course is to introduce students to some of the most important theory and practice for studying international relations. The aim of the course is to understand International relations and its multidisciplinary nature where the student will be accommodated with contemporary trend of multidisciplinary discourse. Following are the objectives:</p> <ul style="list-style-type: none"> • To provide a fairly all-inclusive overview of the major political developments and events starting from the days of Peloponnesian war. • To provide a comprehensive and in-depth orientation to students to understand the character of contemporary character of international relations. • To enable students to learn about the key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives. 			
Pre-Requisites	Basic knowledge of world history and politics and understanding of the current dynamics of the international politics			
Teaching Scheme	Regular classroom lectures with periodic formative coursework like term paper, problem sets, case studies, report writing, mock exams and presentations will be done with an emphasis to develop coherence among students on both the conceptual understanding and the practical knowledge settings.			

Detailed Syllabus:

Units	Topic	Hours
Unit-I	Theories and Approaches to the Study of International Relations: Evolution of the Discipline, The Great Debates, State of the Art.	13
Unit-II	Concept of Idealism and Realism, Its Variants and Complements: Neorealism, Indian Tradition: Kautilya's Realpolitique, Chinese Tradition, European Schools of Thought, The English School, Neo-Liberal Institutionalism	13
Unit-III	Alternative Approaches in IR: Critical Theory, Constructivism, Post-Modernism, Feminism, Neo-Marxism, Ethics in IR	13
Unit-IV	Conflict and Peace: Changing Nature of Warfare; Weapons of mass destruction; deterrence; conflict resolution, conflict transformation, The Nuclear Age and its impact on International Relations, NPT, CTBT.	13
	Total	52

Suggested Readings:

1. Aron Raymond, 'Peace and War: A Theory of International Relations,' (New Brunswick, New Jersey, London, Transaction Publishers, 2003).
2. Bandhopadhyay, J., General Theory of International Relations, Allied Publishers, New Delhi.
3. Baral J.K., International Politics: Dynamics and Dimensions, South Asian Publishers, New Delhi, 1987.
4. Basu, Rumki, International Politics: Concepts, Theories and Issues, Sage Text, New Delhi, 2014
5. Bull Hedley, The Anarchical Society: A Study of Order in World Politics (New York, 1977).
6. Burchill S and A. Linklator, Theories of International Relations, Martin Press, New York, 1966.
7. Chris Brown, Understanding International Relations, (MacMillan: London, 1997)
8. Doughery, J.E. and R.L. Falzgraff Jr., Contending Theories of International Relations, J.B. Lippincott Co. 1971, New York.
9. Gilpin, Robert, The political Economy of International Relations Princeton, (1887)
10. Holsti, K.J., International Politics: Framework for analysis (New Delhi, 1989)
11. Jackson, R. and George Sorensen, Introduction to International Relations: Theories and Approaches, OUP, 2003.
12. Kumar, Mahendra, Theoretical Aspects of International Politics, Shivalal Aggarwal & Co. Agra, 1967.
13. Morgenthau, Hans J, Politics among Nations: The Struggle for Power and Peace, New York, 1985.
14. Scott Burchill, Andre Linklater and Terry Nardin, eds., Theories of International Relations, 4th Edition, (Palgrave Macmillan Publishers, 2009).
15. Strange Susan, States and Markets: An Introduction to International Political Economy, (London: Pinter Publishers, 1994)
16. Waltz Kenneth N., Theory of International Politics. (New York: Addison-Wesley, 1979).

Course Outcome	By the end of this course Students are able to: <ol style="list-style-type: none"> i. Conceptualize various perspectives to international relations. ii. Appreciate various philosophies relating to international relations and conceptualize various foundational theories in International Relations. iii. Analyze dynamics of contemporary and alternative theories relating to International Relations.
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PSC C -104: PUBLIC ADMINISTRATION

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC C –104	PUBLIC ADMINISTRATION	4	20	80
Objectives	The essence of Public Administration lies in its effectiveness in translating the governing philosophy into programmes, policies and activities and making it a part of community living. The paper covers public administration in its historical context thereby proceeding to highlight several of its categories, which have developed administrative salience and capabilities to deal with the process of change. Organised into four units, the recent developments and particularly the emergence of New Public Administration are incorporated within the larger paradigm of democratic legitimacy.			

Pre-Requisites	Basic knowledge on Public Administration, administrative salience and capabilities to deal with the process of change.
Teaching Scheme	Regular classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Unit	Topics	Hours
Unit-I Public Administration	Meaning, Scope, Evolution and Significance of Public Administration. Public and Private Administration.	13
Unit-II Principles of Public Administration	Role of Public Administration in Developing and Developed countries, Development administration.	13
Unit-III Paradigms of Public administration	Hierarchy, Span of Control, Unity of Command Delegation, Co-ordination, Delegated Legislation, Administrative Adjudication.	13
Unit-IV New Public Administration	New Public Administration New Public Management	13
	Total	52

Selected Readings:

1. Avasthi and Maheswari, "Public Administration", Agra, Laxmi Narayan Agarwal, 1988.
2. Mohit Bhattacharya "Public Administration", World Press (Second Edition, 1991)
3. Rumki Basu, "Public Administration: Concepts and Theories" New Delhi, Sterling Publishers, 2011.OUP.2006.
4. Stone, Deborah. 2001. Policy Paradox: The Art of Political Decision Making. W.W Norton and Company.
5. R.K. Sapru. 1980. Administrative Theories and Management Thought. New Delhi: PHI
6. Bidyut Chakrabarty & Mohit Bhattacharya (Eds), 2003, Public Administration: A Reader, Oxford University Press, New Delhi
7. Alaka Dhameja (Ed), "Contemporary Debates in Public Administration", New Delhi, 2003.
8. Ramesh K. Arora(Eds.), 2004, Public Administration: Fresh Perspectives, Aalek Publishers, Jaipur
9. Bidyut Chakravorty, "Public Administration in a Globalized World", New Delhi, Sage

Course Outcome	By the end of the course students will have a conceptual clarity on <ul style="list-style-type: none"> • The essence of Public Administration • The Historical context of Public administration • The recent developments particularly the emergence of New Public Administration
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PSC C- 105: WESTERN POLITICAL THOUGHT-I

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC C- 105	WESTERN POLITICAL THOUGHT-I	4	20	80

Objectives	This paper studies the classical tradition in political theory from Plato to Marx with the view to understand how the great Masters explained and analyzed political events and problems of their time and prescribed solutions.
Pre-Requisites	Basic knowledge on classical traditions of political theory
Teaching Scheme	Regular classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Units	Topics	Hours
Unit-I	Plato, Aristotle	13
Unit-II	Machiavelli, Hobbes, Locke, Rousseau	13
Unit-III	Hegel, Marx	13
Unit-IV	Bentham , J.S Mill	13
	Total	52

Selected Readings:

1. Aristotle, The Politics, Translated Ernest Braker, Oxford, Oxford University Press, 1998.
2. Hobbes, Thomas, The Leviathan, Amherst New York, Prometheus Books, 1988.
3. Hegel, Georg Wilhelm Fredrik, The Philosophy of Right, Translated by T.M. Knox Oxford, Oxford University Press, 1942.
4. Machiavelli, Niccolo, The Prince and The Discourses, translated L. Ricci, New York, Modern Library, 1950.
5. Kant, Political Writing, Translated by H.B Nisbet, edited by Hans Reiss, Cambridge, Cambridge University Press, 1991.
6. Marx Karl 'Economic and Philosophical Manuscripts' 1844. Translated by Lloyd G Easton and Kurt H Guddat in Marx Selections edited by Allen W Wood. New York, Macmillan, 1988. pp 40-79.
7. Marx Karl, Das Capital, volume 1, Moscow Progress, 1977.
8. Avineri Shlomo, Hegel's Theory of the Modern State, Cambridge, Cambridge University Press, 1972.
9. Beiner, Ronald and William James Booth, Kant and Political Philosophy New Haven, Yale, University Press, 1993.
10. Cohen, G.A, Karl Marx's Theory of History, Oxford, Oxford University Press, 1978.
11. 'Machiavelli' by Quentin Skinner, 'Hobbes' by Richard Tuck, 'Mill' by William Thomas, 'Marx' by Peter Singer in Great Political Thinkers. Oxford, Oxford University Press, 1992.
12. Macpherson, C.B., The Political Theory of Possessive Individualism, Oxford, Oxford University Press, 1962.

Course Outcome	By the end of the course students will have a conceptual clarity on Historical and philosophical perspectives to understand the universality of the enterprise of political theorizing. The legacy of the thinkers with the view to establish the continuity and change within the Western political tradition.
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Semester-II

PSC C 201: POLITICAL SOCIOLOGY

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
PSC C 201	POLITICAL SOCIOLOGY	4	20	80
Objectives	<p>The basic objective of this course is:</p> <ul style="list-style-type: none"> • To explore the main sociological explanations of political behaviour. • To understand how does political mobilization take place and how political organizations (parties) and elites shape the interaction between citizens, society and power? • To understand processes of political engagement and participation and political behavioral in general. 			
Pre-Requisites	Basic knowledge of Sociology and Political Science			
Teaching Scheme	Regular classroom lectures (virtual and actual) with periodic evaluative and demonstrative exercises like term paper writing, MCQs, case studies, report writing, mock examinations and presentations will be done.			

Detailed Syllabus:

Units	Topics	Hours
Unit-I	Political Sociology: Origin and Development, Definition and Scope Theoretical Approaches to the study of Political Sociology	13
Unit -II	Political Culture Political Socialization Political Participation Political Communication	13
Unit -III	Power, Authority, Legitimacy Elite Theory, Circulation of Elites	13
Unit -IV	Social Stratification and its Bases Political Development Political Modernization	13
Total		52

Reading List:

1. Keith Faulks, Political Sociology: A Critical Introduction, Edinburgh University Press, 1999.
2. Kate Nash and Alan Scott (eds.), The Blackwell Companion to Political Sociology, Wiley- Blackwell, 2004.
3. Amal Kumar Mukhopadhyay, K P Bagchi & Co Political Sociology An introductory analysis, 2015.
4. Dipankar Gupta, Political Sociology in India: Contemporary Trends, Orient Black Swan, 1996.
5. Gabriel A Almond and Sydney Verba, The Civic Culture: Political Attitudes and Democracy in Five Nations, , Little, Brown and Company, 1965.
6. Douglas Baer, Political Sociology, Oxford University Press, 2002.
7. Benedikte Brincker, Hans Reitzel, Introduction to Political Sociology, 2013.
8. Betty Dobratz et al, Power, Politics, and Society: An Introduction to Political Sociology,, Pearson Education, 2011.
9. Keith Faulks, Political Sociology: A Critical Introduction, Edinburgh University Press,

1999.

10. Kate Nash, Contemporary Political Sociology, Wiley-Blackwell, 2010.

11. Anthony Orum and John Dale, Political Sociology: Power and Participation in the Modern World, Oxford University Press, 2008.

Course Outcome	On completion of this course, students are expected to have acquired a familiarity with major features of contemporary societies that are relevant to politics. Acquire an understanding of recent social and political science explanations of political processes and events. Acquire, more generally, a grasp of the competing approaches in the field Comprehend different opportunities to influence political decisions by average citizens.
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PSC C -202: COMPARATIVE POLITICAL ANALYSIS

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
PSC –C 202	COMPARATIVE POLITICAL ANALYSIS	4	20	80
Objectives	To familiarize students with the basic concepts and approaches to the study of comparative politics. To critically examine politics in historical and contemporary perspectives while engaging with various themes of comparative analysis in developed and developing countries. To understand governmental systems of US, UK, China and Japan in comparative perspective.			
Pre-Requisites	Basic knowledge of world history and Government and politics of both developed and developing countries			
Teaching Scheme	Regular classroom lectures with periodic formative coursework like term paper, problem sets, case studies, report writing, mock exams and presentations will be done with an emphasis to develop coherence among students on both the conceptual understanding and the practical knowledge settings.			

Detailed Syllabus:

Units	Topics	Hours
Unit -I	Comparative Politics: Nature and Scope Comparative Methods: An overview of the field of Comparative Political Analysis. Nature of Traditional and Modern Politics Political Systems and Structural Functional Approach	13
Unit -II	Institutional Approach and New Institutionalism, Development of Neo-institutionalism, Models of New Institutionalism Actors and Process Political Parties and Party System: Duverger, Giovanni Sartori, and Jean Blondel's Model.	13
Unit -III	Actors and Process Electoral Systems, Types of election system (First Past the Post, Proportional Representation, Mixed Representation)	13

Unit- IV	Comparative Governments of U.K, USA and China Constitutionalism, Executive and Legislature	13
Total		52

Essential Readings:

1. Allbrow, Martin, The Global Age: State and Society: Beyond Modernity, Cambridge.
2. Alavi, H. and T. Shanin, Sociology of Developing Societies, London, Macmillan, 1982.
3. Alford, Robert A. and Roger Friedland, Powers of Theory, Cambridge, Cambridge University Press, 1985.
4. Bottomore, T.B, Elites and Society, Harmondsworth, Penguin, 1985.
5. Cantori, L.J and A. H. Ziegler edited, Comparative Politics in the Post-Behaviouralist Era, London, Lynne Rienner, 1988.
6. Chilcote, Ronald, Theories of Comparative Politics: The Search for a Paradigm Reconsidered, Boulder, Westview Press, 1994.
7. Hardtm, Michael and Antonio Negri, Empire, Cambridge, Harvard University Press, 2000.
8. Manor, James edited, Rethinking Third World Politics, London, Longman, 1991.
9. Moore, B. The Social Origins of Dictatorship and Democracy, Harmondsworth, Pelican, 1966.
10. Sartori, G., Parties and Party Systems: A Framework for Analysis., Cambridge, Cambridge University Press, 1976.
11. Stephan, Alfred, Arguing Comparative Politics, Oxford, Oxford University Press, 2001.
12. Tornquist, Olle, Politics and Development, Delhi. Sage, 1999.
13. Wayne, Ellwood, The No-Nonsense guide to Globalisation, London, Verso, 2001.
14. Wright, Mills C. The Power Elite, New York, John Wiley, 1959.
15. Rahnema, Majid edited. The Post-Development Reader, Dhaka: The University Press, 1997.

Course Outcome	By the end of this course Students will able to know: <ul style="list-style-type: none"> • the diversity of key aspects of political systems around the world and how they affect important outcomes • differences across countries such as social movements, political culture, political parties, party systems, regimes, states and policy-making processes • The meaning of fundamental concepts in comparative political analysis, including: the state, nations and society, regimes, markets, development, multi-level governance. • The meaning of fundamental institutions of democratic regimes: Constitutionalism, legislatures and the executive and Political systems, elections, interest groups.
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PSC C-203: CONTEMPORARY ISSUES IN INTERNATIONAL RELATIONS

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
PSC C- 203	CONTEMPORARY ISSUES IN INTERNATIONAL RELATIONS	4	20	80

Objectives	The basic objective of this course is: <ul style="list-style-type: none"> To provide the students a fairly comprehensive overview of the major political developments and events starting from the twentieth century. To provide a comprehensive and in-depth orientation to students to understand the character of contemporary character of international relations. To enable students to learn about the key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives. The aim of the course is to understand International relations and its multidisciplinary nature where the student will be accommodated with contemporary trend of multidisciplinary discourse.
Pre-Requisites	Basic knowledge of world history and politics.
Teaching Scheme	Regular classroom lectures (virtual and actual) with periodic evaluative and demonstrative exercises like term paper writing, MCQs, case studies, report writing, mock examinations and presentations will be done.

Detailed Syllabus:

Units	Topics	Hours
Unit-I Contemporary trends	End of bipolarity and changing trends in Super Power Relations (a) Terrorism, International Peace and Role of non-State actors Changing Role of the United Nations in International Politics: (a) New Challenges of Peace-keeping (b) UN and Human Development (b) Structural Reform of the UN	13
Unit-II Contemporary processes	Politics on Nuclearisation Ecological and Development issues, Global Commons	13
Unit-III Major powers and Regional Conflicts	Major Powers and West Asia (a) Major Powers and South Asia (b) Politics of the Indian Ocean (c) Geo-Politics of South China Sea	13
Unit-IV Regionalism and Regional Blocs	Regionalism and Regional Blocs (a) EU (b) ASEAN (c) APEC (d) SCO	13
Total		48

Reading List:

- John T. Rourke, International Politics on the global stage, McGraw Hill, 2007.
- Paul A. Tharp(ed.), Regional International Organisations: Structures and functions, 1971.
- Chris Brown, *Understanding International Relations*, (MacMillan: London, 1997)
- Baral, J.K., *International Politics: Dynamics and Dimensions* (New Delhi, 1987)
- Bull, Hadley, *The Anarchical Society: A Study of Order in World Politics* (New York, 1977)
- Thomas J. Volgy et al. (eds.), Major Powers and the Quest for Status in International Politics Global and Regional Perspectives, Palgrave Macmillan, 2011.
- Geoff Berridge, Return to the UN: UN diplomacy in Regional Conflicts, Wheatsheaf, 1991.

8. Markusthiel, The limits of transnationalism collective identities and Eu integration, Palgrave Macmillan, 2011.
9. Juliet Kaarbo, James Lee Ray Wadsworth, Global Politics, Cengage Learning, 2011.
10. Louise L' Estrange, Andrew Hurrell, Regionalism in world politics: Regional Organisation and international order, Oxford University Press, 1995.
11. Andrew Heywood, Global Politics, Palgrave Macmillan, 2011.

Course Outcome	By the end of this course Students are able to: <ol style="list-style-type: none"> 1. Know about the various theatres of international conflicts and the role of major powers in them. 2. Appreciate various aspects of global politics following the end of the Cold war and acquaint themselves with global issues of recent times. 3. Develop an understanding about the changing role of the UN and the reason behind the strengthening of regional international organisations.
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PSC C- 204: ADMINISTRATIVE THEORY

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC C -204:	ADMINISTRATIVE THEORY	4	20	80
Objectives	The course will seek to comprehend the broad intellectual traditions in administration that has decisively shaped the contours of Administrative system as we understand it today. The different ideological standpoints with regard to various concepts and theories are critically explained with the purpose of highlighting the differences in their perspectives and in order to understand their continuity and change. Furthermore there is a need to emphasize the continuing relevance of these concepts today. Organised into four units this paper aims to highlight different theoretical perspectives on public administration. Further its relevance will be explained through historical evolution of the subject.			
Pre-Requisites	Basic knowledge on broad intellectual traditions in administration that has decisively shaped the contours of Administrative system			
Teaching Scheme	Regular classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Units	Topics	Hours
Unit I: Theories of Administration & Management	Development and Growth of Administrative Theories; Scientific Management Theory: Frederick Winslow Taylor, Ecological: Fred. W. Riggs.	13
Unit-II: Bureaucracy vs. Administration and Systemic Administration	Max Weber Theory of Bureaucracy Views of Herbert Simon on Decision-Making Systems Approach	13
Unit-III: Choice Based	Socio- Psychological Approach Perspectives of Public Choice	13
Unit-IV: Conflict and Objectives Based	Managing Conflict in the Organization: Mary Parker Follett Management by Objectives- Peter Drucker	13
	Total	52

Selected Readings:

1. Goel, S.L. (2003). Advanced Public Administration, Deep & Deep Publications, New Delhi.
2. Maheshwari S.R., (1991). Issues and Concepts In Public Administration, New Delhi, Allied Publishers.
3. Naidu S.P., (1996). Public Administration: Concepts and Theories, Hyderabad, New Agem International Publishers
4. Sharma M.P. and Saldana B. L., (2001), Public Administration in Theory and Practice, Allahabad, KitabMahal
5. Buck Susan J. and Morgan Betty N.,(2005). Public Administration in Theory and Practice, Raymond W. Cox III, Pearson Education, New Delhi.
6. D. RavindraPrasad, V. Sivalinga Prasad, (2010). Administrative Thinkers, Sterling Publishers,
7. Mohit Bhattacharya, (2008). New Horizons of Public Administration, Jawahar Publishers & Distributors, New Delhi.
8. Herbert A. Simon, (1997). Administrative Behavior, 4th Edition, Free Press, New York.
9. Thomas R Dye, (2008). Understanding Public Policy: International Edition, Pearson/Prentice Hall.
10. Governance: A Reader. (2008) Bidyut Chakrabarty, Mohit Bhattacharya, Oxford University Press, USA.

Course Outcome	By the end of the course students will have a conceptual clarity on: Broad intellectual traditions in administration that has decisively shaped the contours of Administrative system as we understand it today. Continuity and change in the different ideological standpoints and the need to the continuing relevance of these concepts today.
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PSC C-205: WESTERN POLITICAL THOUGHT-II

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC C-205	WESTERN POLITICAL THOUGHT-II	4	20	80
Objectives	This paper focuses on thinkers and themes of western political philosophy. An attempt has been made to understand thinkers and texts both from philosophical and historical perspective. The main objective is to train students in the foundational texts and thinkers of western political philosophy.			
Pre-Requisites	Basic knowledge on contemporary relevance of political thought.			
Teaching Scheme	Regular classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus

Unit	Topics	Hours
Unit-I	<ul style="list-style-type: none"> • Gramsci • Mao-Zedong 	13

Unit-II	<ul style="list-style-type: none"> • Mary Wollstonecraft • Hannah Arendt 	13
Unit-III	<ul style="list-style-type: none"> • Rawls • Nozick 	13
Unit-IV	<ul style="list-style-type: none"> • Frantz Fanon • Rosa Luxemburg 	13
Total		52

Selected Readings:

1. Aristotle, The Politics, Translated Ernest Braker, Oxford, Oxford University Press, 1998 edn.
2. Hobbes, Thomas, The Leviathan, Amherst New York, Prometheus Books, 1988.
3. Hegel, Georg Wilhelm Fredrik, The Philosophy of Right, Translated by T.M. Knox Oxford, Oxford University Press, 1942.
4. Machiavelli, Niccolo, The Prince and The Discourses, translated L. Ricci, New York, Modern Library, 1950.
5. Kant, Political Writing, Translated by H.B Nisbet, edited by Hans Reiss, Cambridge, Cambridge University Press, 1991.
6. Marx Karl 'Economic and Philosophical Manuscripts' 1844. Translated by Lloyd G Easton and Kurt H Guddat in Marx Selections edited by Allen W Wood. New York, Macmillan, 1988 pp40-79.
7. Marx Karl, Capital volume 1, Moscow Progress, 1977.
8. Avineri Shlomo, Hegel's Theory of the Modern State, Cambridge, Cambridge University Press, 1972.
9. Beiner, Ronald and William James Booth, Kant and Political Philosophy New Haven, Yale, University Press, 1993.
10. Cohen, G.A, Karl Marx's Theory of History, Oxford, Oxford University Press, 1978.
11. 'Machiavelli' by Quentin Skinner, 'Hobbes' by Richard Tuck, 'Mill' by William Thomas, 'Marx' by Peter Singer in Great Political Thinkers. Oxford, Oxford University Press, 1992.
12. Macpherson, C.B., The Political Theory of Possessive Individualism, Oxford, Oxford University Press, 1962.

Course Outcome	By the end of the course students will have a conceptual clarity on Nature and significance of western political thought Continuing significance of the study of the classics and indicates its shortcomings by underlining the need to incorporate new perspectives that have arisen in recent past.
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***PSC VAC-206: HUMAN RIGHTS IN INDIA: CONCEPT AND PRACTICE (Non-Credit)**

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC-206	HUMAN RIGHTS IN INDIA: CONCEPT AND PRACTICE	Non Credit	--	--
Objectives	The course provides an introduction to basic human rights philosophy, principles, instruments and institutions, and also an overview of current issues and debates in the field. The course is geared towards equipping the students with conceptual and theoretical understanding of the subject in a very broad sense. It seeks to do so in a synergistic way by coalescing values, concepts, contending debates, theories, and paradigms			

	germane to the course. The course seeks to sharpen the epistemological skills of students in relation to the various theoretical aspects of human rights.
Pre-Requisites	Basic Knowledge on human rights philosophy, principles, instruments and institutions, and also an overview of current issues and debates in the field
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Understanding Human Rights <ul style="list-style-type: none"> • Historical Evolution • Origin and Development of Human Rights in India 	13
Unit-II	Human Rights and Indian Constitution <ul style="list-style-type: none"> • Fundamental Rights • Directive Principles of State Policies • Human Rights of the Marginalized 	13
Unit-III	Violation of Human Rights and Institutional Mechanisms for Protection of Human Rights <ul style="list-style-type: none"> • National Human Rights Commission • State Human Rights Commission • Judiciary 	13
Unit-IV	Non-State Actors and Human Rights <ul style="list-style-type: none"> • Civil Society • Human Right Activists 	13
	Total	52

Selected Readings:

- Alferdsson, Gudmundur and Eide, Asbjorn, ed., The Universal Declaration of Human Rights: A Common Standard of Achievement, The Hague, Martinus Nijhoff publishers, 1999.
- Bhargava, Rajeev and Acharya, Ashok, eds. Political Theory: An Introduction, Delhi: Pearson, 2014.
- Dixon, Martin, Textbook on International Law, London: Blackstone Press, 2000.
- Donnelly, Jack, Universal Human Rights in Theory and Practice, Jaipur: Rawat, 2014.
- Freeman, Michael, Human Rights, New Delhi: Atlantic for Polity Press, 2003.
- Krishnamurthy, B., Ganapathy-Dore, Geetha, European Convention on Human Rights: Sixty Years and Beyond, New Delhi: New Century Publications, 2012.
- Monshipouri, Mahmood, Englehart, Neil, et.al., eds., Constructing Human Rights In The Age of Globalization, New Delhi: Prentice-Hall, 2004.
- Motilal, Shashi, ed., Applied Ethics and Human Rights: Conceptual Analysis and Contextual Applications, Delhi, Anthem Press, 2011.
- Paul Gordon Lauren, The Evolution of International Human Rights: Visions Seen, Philadelphia: University of Pennsylvania Press, 2003.

- Rahman, Anisur, ed., Human Rights and Social Security: Perspectives, Issues and Challenges, New Delhi: Manak Publications, 2011.
- Runzo, Joseph, Martin, Nancy M and Sharma, Arvind, Human Rights and Responsibilities in the World Religions, Oxford: One World Publications, 2003.
- Sinha, Manoj Kumar, Enforcement of Economic, Social and Cultural Rights: International and National Perspectives, New Delhi: Manak Publications, 2006.

Course Outcome	<p>The programme enables students to take an analytic and critical stance and deal with questions of how human rights affect social and political processes. At the end of the programme you will be able to</p> <ul style="list-style-type: none"> • search for, identify and assess primary sources as well scholarly literature about human rights • identify, contextualise and use information about the human rights situation in a given country, • critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies • analyse a country's situation or an international situation in terms of human rights and formulate human rights-based initiatives and policies • promote human rights through legal as well as non-legal means • participate in legal, political and other debates involving human rights in a knowledgeable and constructive way
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Semester-III

PSC E-301 (A): INDIAN POLITICAL THOUGHT

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC E-301 (A)	INDIAN POLITICAL THOUGHT	4	20	80
Objectives	<p>The focal theme of the paper is to focus on Indian philosophical systems of thought on social and political ideas and to what extent is Indian Political thought a rejection, derivative-imitation or innovative-transformation of Western Political Thought.</p> <p>It is an attempt to discuss systematically the political ideas of various political and social leaders and thinkers of India. Organised into four units, the paper emphasizes the distinctive contribution of Indian thinkers to political theorizing and the relative autonomy of Indian political thought.</p>			
Pre-Requisites	Basic Knowledge on Indian philosophical systems of thought			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Unit	Topics	Hours
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Unit-I	Manu and Kautilya	013
Unit-II	Raja Ram Mohan Roy Vivekananda	13
Unit-III	B.R. Ambedkar M.K. Gandhi Jawaharlal Nehru	13
Unit-IV	Ram Manohar Lohiya Jayprakash Narayan	13
	Total	52

Selected Readings:

1. Ambedkar, B.R., Annihilation of Caste, edited by Mulk Raj Anand, Delhi, Arnold Publisher,
2. Appadorai, A., Indian Political Thinking in the 20th Century (New Delhi, 1987).
3. Chatterjee, P., Nationalist Thought and the Colonial World: Derivative Discourse?, London,
4. Dalton, D.G., Indian Idea of Freedom. Gurgaon, Academy Press, 1984.
5. Das, H.H. and Patra, P.S.N., Indian Political Thought (Sterling).
6. Jha, D.N., Ancient India: An Introductory Outline. Delhi, People's Publishing House, 1993.
7. Karunakaran, K.P., Indian Politics from Dadabhai Nauroji to Gandhi, Delhi, Asia 1967.
8. Masih, Y., Introduction to Religious Philosophy, Delhi, Motilal Banarsidas. 1971.
9. Mehta, V.R., Foundations of Indian Political Thought, Delhi, Manohar Publisher, 1992.
10. Mehta, V.R., Ideology, Modernisation and Politics in India. Lahore, Book Traders, 1990.
11. Mishra, J.K. Indian Political Tradition: Ancient and Modern, 1993.
12. Mohanty, Dushmanta, Indian Political Tradition (New Delhi, 1997).
13. Narvane, V.S. Modern Indian Thought, New Delhi, Orient Longman, 1978.
14. Padhi, K.S., Indian Political Tradition (Berhampur, 1997).
15. Pantham, T. and Deutsch, K.L. edited, Modern Indian Political Thought, Delhi, Sage, 1986.

Course Outcome	By the end of the course students will have a conceptual clarity on Indian philosophical systems of thought on social and political ideas. The political ideas of various political and social leaders and thinkers of India.
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PSC E -301 (B): POLITICAL PROCESSES IN INDIA (Core elective-Optional)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC E -301 (B)	POLITICAL PROCESSES IN INDIA	4	20	80

Objectives	Teaching politics in a country has to be grounded in understanding and analysis of politics of the country concerned. Thus, organised in four units, this paper focuses in detail on the political processes and the actual functioning of the political system. It then examines the functioning of various social movements, the nature of Indian party system, civil society groups and the statutory and constitutional bodies of governance. The major contradictions of the Indian political process are critically analyzed along with an assessment of its relative success and failures.
Pre-Requisites	Basic knowledge of the political processes and the actual functioning of the political system.
Teaching Scheme	Regular classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Units	Topics	Hours
Unit I: Nature of Indian State	State, Economy and Development: Nature of Indian State, New Economic Policy Process of Globalisation: Social and Economic implications	13
Unit-II: Social Movements and Civil Society Groups	Social Movements: Dalit, Tribal, Women, Farmers, Environment. Civil Society Groups: Non-Party Social Formations, Non-Governmental Organisations, Social Action Groups.	13
Unit-III: <i>Electoral Politics in India</i>	Social and Ideological bases: National and Regional Parties Coalition Politics at the national and state level Electoral Process and Election Commission of India.	13
Unit IV Constitutional and Statutory Bodies	Constitutional and Statutory Bodies: Comptroller and Auditor\General, Finance Commission, National Commission for Scheduled Castes, National Commission for Scheduled Tribes, National Commission for Human Rights, National Commission for Women, National Commission for Minorities.	13
	Total	52

Selected Readings:

1. Chatterjee, Partha. 2010. "The state," in Niraja Gopal Jayal and Pratap Bhanu Mehta (eds). The Oxford companion to politics in India. New Delhi: OUP.
2. Das, Samir Kumar. 2013. "Introduction: Surveying the literature on state in post-Independence India," in Samir Kumar Das (ed.). ICSSR research surveys and explorations: Political Science, Vol.1. New Delhi: ICSSR/Oxford University Press.
3. Menon, Nivedita and Aditya Nigam. 2007. Power and contestation: India since 1989. New Delhi: Zed.
4. Basu, Amrita. 2010. "Gender and Politics," in Jayal and Mehta (eds). The Oxford companion to politics in India.
5. Guru, Gopal "Social justice," in Jayal and Mehta (eds). The Oxford companion to politics in India.
6. Jhodka, Surinder. 2010. "Caste and politics," in Jayal and Mehta (eds). The Oxford companion to politics in India.
7. Pai, Sudha. 2013. Dalit assertion. New Delhi: OUP short introduction series.
8. Xaxa, Virginius. 2005. "Politics of language, religion and identity: Tribes in India," Economic and Political Weekly, 40(13).

9. Kaviraj, Sudipta. 2001. "In search of civil society," in Sudipta Kaviraj and Sunil Khilnani. Civil society: History and possibilities. Cambridge: Cambridge University Press.
10. Kothari, Smitu. 1993. "Social Movements and the redefinition of democracy" in Philip Oldenburg (ed.). India briefing. Boulder: Westview Press.
11. Mohanty, Manoranjan and Partha Nath Mukherji (eds.). 1998. People's rights: Social movements and the state in the Third World. New Delhi: Sage.
12. Nayar, Deepak. 2006. "India's unfinished journeys: Transforming growth into development," Modern Asian Studies 40(3), pp.797-832. .
13. Sachs, Jeffrey, Ashutosh Varshney and Nirupam Bajpai (eds). 2000. India in the era of economic reforms. New Delhi: Oxford University Press.
14. Suri, K.C. 2006. "Political economy of agrarian distress." Economic and Political Weekly 15. 41(16), 1523-29.
16. Kohli, Atul. 2001. "Introduction," in Atul Kohli (ed.). The success of India's democracy. New Delhi: Cambridge/Foundation.

Course Outcome	By the end of the course students will have a conceptual clarity on The political processes and the actual functioning of the political system. The major contradictions of the Indian political process along with an assessment of its relative success and failures
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PSC E-302 (A): INDIA'S FOREIGN POLICY
(Elective)

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
SPS-303(A)	INDIA'S FOREIGN POLICY	4	20	80
Objectives	The basic objective of this course is: To introduce students to the mechanics of foreign policy making and the issues that influence the policy in order for them to develop a perspective on the emerging trends in Indian foreign policy			
Pre-Requisites	Basic knowledge of the necessities of foreign relations, World War-II, Cold War, the UN			
Teaching Scheme	Regular classroom lectures (virtual and actual) with periodic evaluative and demonstrative exercises like term paper writing, MCQs, case studies, report writing, mock examinations and presentations will be done.			

Detailed Syllabus:

Units	Topics	Hours
Unit-I	Determinants of India's Foreign Policy: domestic and international Evolution of Indian Foreign Policy: Pre-Independence to Post-Independence	13
Unit-II	Making of India's Foreign Policy: Institutions, Structure, and Processes Continuity and change in foreign policy : Non-Alignment, Terrorism, Energy Security, Indian Diaspora	13
Unit-III	Relations with Global and Regional International Institutions: UN, WTO, ASEAN, APEC, EU, IORA, SAARC	13
Unit-IV	India and neighbours: Pakistan, Bangladesh, Nepal and Sri Lanka India and Major Powers: United States, PRC and Russia	13

	India's global aspirations and its constraints (with special emphasis on National Security and India's Economic and Nuclear Policy)	
Total		52

Reading List:

1. Kanti Bajpai, Saira Basit, Krishnappa, V. eds., India's Grand Strategy: History, theory, cases, Routledge India, 2014.
2. J. Bandyopadhyaya, The Making of India's Foreign Policy: Determinants, Institutions, Processes, And Personalities, Allied Publishers, 1970.
3. J. N. Dixit, Indian Foreign Policy and its Neighbours, Gyan Publishing, 2001.
4. Sumit Ganguly, India's Foreign Policy-Retrospect and Prospect, Oxford, 2010.
5. Sumit Ganguly, Indian foreign Policy (short introduction), Oxford, 2019.
6. Anjali Ghosh, Tridib Chakrobroti, Anindyo Jyoti Majumdar and Shibashis Chatterjee, eds., India's Foreign Policy, Pearson, 2009.
7. C. Raja Mohan, Crossing the Rubicon: The Shaping of India's New Foreign Policy, Penguin Books, 2005.
8. Jawaharlal Nehru, India's Foreign Policy: Selected Speeches, September 1946-April 1961, Publications Division, Ministry of Information and Broadcasting, Govt. of India, 1961.
9. Nancy Jetly and Rajendra Prasad, India's Foreign Policy: Challenges And Prospects, Vikas Pub. House, 1999.
10. S.D. Muni, India's foreign Policy, the Democracy Dimension, Foundation Books, 2009.
11. Shashi Tharoor, Reasons of State: Political development and India's foreign policy under Indira Gandhi, Vikas Publishing House pvt ltd., 1982.
12. B.R. Nanda edited India's Foreign Policy in the Nehru Years, Vikas Publishing House pvt. ltd., 1976.
13. V. P. Dutta, India's Foreign Policy since Independence, National Book Trust, 2007.

Course Outcome	<p>On completion of this course, students are expected to</p> <p>Understand the basic features of Indian foreign policy that have evolved over seven decades of nationhood.</p> <p>Understand processes of policy making and appreciate the complexities involved in it.</p> <p>Appreciate the role of various Prime Ministers in the foreign policy making.</p> <p>Know the challenges that India faces in its neighbourhood and the reasons behind the policy stances.</p> <p>Gain an understanding of the history and current India's policy with regards to our relations with important world players and regional powers.</p> <p>Understand India's stand on Nuclear Weapons and the restructuring of the UN.</p>
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PSC E-302(B) INTERNATIONAL RELATIONS OF SOUTH ASIA

(Elective)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC CE-302(B)	INTERNATIONAL RELATIONS OF SOUTH ASIA	4	20	80

Objectives	International relations of South Asia are based on the study of South Asia as a region. The course will consider a number of conceptual and policies' questions and explore how the South Asian region has been transforming with the globalization of its economy, the resurgent ethnic conflicts, situated in a nuclearized security environment and the ever deepening and rapidly pervading connections with the global and local extremism and terrorism.
Pre-Requisites	Basic Knowledge on International relations of South Asia
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	The Origins and nature of South Asian States. Socio-Cultural Structures and the Post-colonial challenges of State construction and nation- building.	13
Unit-II	Limits of Structural realism and South Asian security.	13
Unit-III	Deterrence theory and Nuclearization of South Asia	13
Unit-IV	Borders and Boundaries : Security Challenges Internal Conflict and Porous Borders Democratization and the Crises of Governance. Migration, Refugee problems Human development	14
Total		52

Selected Readings:

1. Bose, Sugata and Ayesha Jalal (2004), Modern South Asia: History, Culture, Political Economy, London: Routledge.
2. Ludden, David (2002), India and South Asia: A Short History, Oxford: One World Publishers.
3. Nandy, Ashis (1983), The Intimate Enemy: The Loss and Recovery of the Self under Colonialism. New Delhi: Oxford University Press.
4. Jalal, Ayesha (1995), Democracy and Authoritarianism in South Asia: A Comparative and Historical Perspective. Cambridge: Cambridge University Press.
5. Sridharan, E. (ed.) (2011), International Relations Theory and South Asia. New Delhi: Oxford University Press.

Course Outcome	By the end of the course students will have a conceptual clarity on A number of conceptual and policies' questions and explore how the South Asian region has been transforming with the globalization of its economy, The resurgent ethnic conflicts, situated in a nuclearized security environment and the ever deepening and rapidly pervading connections with the global and local extremism and terrorism
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PSC E 303 (A): PUBLIC POLICY AND GOVERNANCE
(Elective)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC CE 304(A)	PUBLIC POLICY AND GOVERNANCE	4	20	80
Objectives	The paper seeks to provide an introduction to the interface between public policy and administration in India. The essence of public policy lies in its effectiveness in translating the governing philosophy into programmes and policies and making it a part of the community living. It deals with issues of decentralization, financial management, citizens and administration and social welfare from a non-western perspective. This paper deals with concepts and different dimensions of governance highlighting the major debates in the contemporary times. There is a need to understand the importance of the concept of governance in the context of a globalising world, environment, administration, development. The essence of governance is explored through the various good governance initiatives introduced in India.			
Pre-Requisites	Basic Knowledge on Public Policy and Governance			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Theoretical understanding of Governance: Governance: Meaning, Definition, Types. Difference between Government and Governance, Evolution of the concept of governance as a part of the neo-liberal discourse, and its critique.	13
Unit-II	Issues of State and Development: Society, State and Market: Autonomy, Strength and Weakness New Public Management and its critique	13
Unit-III	Public Policy and Social Reform: Public Policy: Meaning, Nature and Types, Public Policy Process in India. Public policy and Human Security: Public Policies with special reference to Housing, Health, Drinking Water, Food Security, MNREGA, NHRM, RTE Act, The New Education Policy 2020.	13
Unit-IV	Institutional Mechanisms for Governance Reform: Good Governance; E-Governance, Right to Information, Citizen Charter; Public Delivery System, Corporate Social Responsibility, Ombudsman, Lokpal and Lokayukta	14
Total		52

Course Outcome	By the end of the course students will have a conceptual clarity on <ul style="list-style-type: none"> • The philosophical basis of the ideologies with special emphasis on key thinkers and their theoretical formulations. • The legacy of all the major ideologies.
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PSC E-303 (B): SOCIAL EXCLUSION AND INCLUSIVE POLICY
(Elective)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC C E 303(B)	SOCIAL EXCLUSION AND INCLUSIVE POLICY	4	20	80
Objectives	<p>This course provides better opportunities to the students to learn theoretical and practical aspects of social exclusion. The course is designed in such a way that it would give wider exposure to the students not only about the various aspects and dimension of Social Exclusion but also on various tools and mechanism of inclusion. the specific Objectives of of this course are</p> <p>Conceptualizing discrimination, exclusion and inclusion based on caste/ethnicity and religion.</p> <p>Developing understanding of the nature and dynamics of discrimination and exclusion.</p> <p>Contextualizing and problematizing discrimination, exclusion and inclusion.</p> <p>Developing an understanding of discrimination at an empirical level.</p> <p>Formulating policies for protecting the rights of these groups and eradicating the problem of exclusion and discrimination.</p>			
Pre-Requisites	Basic Knowledge on theoretical and practical aspects of social exclusion and policy for social inclusion.			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Social Exclusion- Concept, Approaches Historical Background of the Concept of Social Exclusion; humiliation, inequalities- social, economic and political, untouchability, stigmatization, discrimination, deprivation, marginalization	13
Unit-II	Forms of Social Exclusion I Religion, Race, Caste, Class, Gender, Indigenous/Adivasi, Disability Migrants and Refugees, Region, Language and Ethnicity, Illness.	13
Unit-III	Ability Enhancement : Education and Social Exclusion Minorities : Rights and Inclusive Policy Scheduled Castes : Rights and Inclusive Policy Scheduled Tribes : Rights and Inclusive Policy Disability : Rights and Inclusive Policy Women : Rights and Inclusive Policy Gender beyond Binaries: Rights and Inclusive Policy	13
Unit-IV	Social Exclusion and Inclusive Policy- the link: Reservation policies for the socially and educationally backward in India. Issues and Challenges in Public Policy	14
Total		52

Course Outcome	<p>1. The course provides an insight into the historical background of the concept social exclusion</p> <p>2. The students will see how the concept is related to various theoretical concepts of inequality, poverty and discrimination</p> <p>3. It discusses different modes of social exclusion with case studies from India and elsewhere</p> <p>4. It discusses case studies relating to social exclusion with a specific focus on poverty, discrimination, deprivation and inequality</p>
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PSC CE-304 (A): POLITICAL IDEOLOGIES
(Elective)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC E-304(B):	POLITICAL IDEOLOGIES	4	20	80
Objectives	This paper studies the role of different political ideologies and their impact in politics. Each ideology is critically studied in its historical context. In course of its evolution and development, the different streams and subtle nuances within each ideology, the changes and continuities in its doctrine and its relevance to contemporary times are highlighted.			
Pre-Requisites	Basic Knowledge on different Political Ideologies			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Contemporary Perspectives-I: Liberalism, Marxism, Feminism,	13
Unit-II	Contemporary Perspectives-II: Neo Liberalism, Neo- Marxism, Multiculturalism, Post Modernism, Ecologism	13
Unit-III	Nationalism: European & Non-European, Internationalism	13
Unit-IV	A Debate on end of Ideologies	13
	Total	52

Selected Readings

1. B. Anderson; Imagined Communities, London, Verso, 1991.
2. S. Avineri and A. de Shalit (eds.), Communitarianism and Individualism, Oxford, Oxford University Press, 1992.
3. L. P. Baradat, Political Ideologies: Their Origins and Impact, Englewood Cliffs NJ Prentice Hall, 1989.
4. R. M. Christenson, et al., Ideologies and Modern Politics, London, Thomas Nelson and Sons, 1971.
5. R. H. Cox, Ideology, Politics and Political Theory, Belmont California, Wadsworth, 1969.

7. C. Funderbunk and R.G. Thobaben, Political Ideologies: Left, Center and Right, New York, Harper Collins College Publishers, 1994.
8. P. Gay, The Dilemma of Democratic Socialism: Eduard Bernstein's challenge to Marx, New York, Columbia University Press, 1952.
9. J. Gray, Liberalisms: Essays in Political Philosophy, London, Routledge, 1989.
10. D. Ingersoll and R.K. Mathews, The Philosophic Roots of Modern Ideologies: Liberalism Communism and Fascism, Englewood Cliffs NJ, Prentice Hall, 1991.
11. W. Kymlicka, Contemporary Political Philosophy: An Introduction, Oxford, The Clarendon Press, 1990.
12. W. Lerner, A History of Socialism and Communism in Modern Times: Theorists, Activists and Humanists, Englewood Cliffs NJ, Prentice Hall, 1995.
13. G. Lichtheim, A Short History of Socialism, London, Weidenfeld and Nicolson, 1970.
14. R. C. Macridis, Contemporary Political Ideologies: Movements and Regimes, New York, Harper Collins, 1992.
15. H. C. Mansfield, The Spirit of Liberalism, Cambridge, Harvard University Press.
16. P. Marshall, Demanding the Impossible: A History of Anarchism, London, Harper Collins, 1992.
17. R. Plant, Modern Political Thought, Cambridge, Basil Blackwell, 1991.
18. G. H. Sabine, A History of Political Theory revised by T.L. Thorson, New Delhi, Oxford and IBH, 1973.
19. M. Seliger, Ideology and Politics, London, Allen and Unwin, 1976.
20. M. Q. Sibley, Political Ideas and Ideologies: A History of Political Thought, New Delhi, Surjeet Publications, 1981.

Course Outcome	By the end of the course students will have a conceptual clarity on The philosophical basis of the ideologies with special emphasis on key thinkers and their theoretical formulations. The legacy of all the major ideologies.
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**PSC E-304 (B) CRITICAL TRADITIONS IN POLITICAL THEORY
(Elective)**

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC CE-305(B)	CRITICAL TRADITIONS IN POLITICAL THEORY	4	20	80
Objectives	While the compulsory papers provide the necessary and mainstream bedrock of political theory, ancient and modern, this course highlights the primary challenges to mainstream liberal theory. It does so from various perspectives which would not otherwise receive the fuller treatment they deserve			
Pre-Requisites	Basic Knowledge on the necessary and mainstream bedrock of political theory, ancient and modern			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Unit	Topics	Hours
Unit-I Introduction	Interrogating tradition What is a critique? The importance of a critical tradition	13

Unit-II Dalit Bahujan Critique	Critique of the theory and practice of caste Theorising the encounter with modernity	13
Unit-III Feminism	Theories of knowledge, critiques of science and rationality	13
Unit-IV Gender and Sexuality	Theories of the Public/Private, Equality/Difference Gender and Sexuality	13
	Total	52

Selected Readings:

1. Dobson, Andrew, Green Political Thought, 2nd. Ed., London: Routledge, 1995.
2. Dobson, Andrew, Justice and the Environment, Oxford: Oxford University Press, 1998.
3. Barrett, Michelle, Women's Oppression Today: Problems in Marxist Feminist Analysis, London: Verso, 1980.
4. Evelyn, Fox Keller and Helen Longino (eds.), Feminism and Science, Oxford: Oxford University Press, 1996.
5. Geetha, V and S Rajadularai, Towards a non-Brahmin Millenium, Calcutta: Samya, 1998.
6. Gilroy, Robert, Green Political Theory, Cambridge, Polity, 1992.
7. Jaggard, Alison, Feminist Politics and Human Nature, Harvard: Harvester University Press, 1983.
8. Merchant, Carolyn edited, Ecology: Key concepts in Critical Theory Series, Jaipur: Rawat.

Course Outcome	By the end of the course students will have a conceptual clarity on- <ul style="list-style-type: none"> • Necessary and mainstream bedrock of political theory, ancient and modern, • The primary challenges to mainstream liberal theory.
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PSC CT-300: INDIAN POLITICAL SYSTEM (CBCT)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC CT-300	Indian Political System ⁴ (Choice Based Paper)		20	80
Objectives	This paper seeks to introduce students the key institutions and processes of governance in India. Organised in four units, the paper deals with historical legacies and foundations of Indian state and democracy with reference to the making of the Indian Constitution.			
Pre-Requisites	Basic Knowledge on key institutions and processes of governance in India.			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Unit	Topics	Hours
Unit-I The Constitution	Preamble Salient features of the Indian Constitution	13

Unit-II The Administrative and Legislative System, Judicial System	Union Executive: President, Vice-President, Council of Ministers , Prime Minister, Bureaucracy Parliament: President, Rajya Sabha, Lok Sabha, Speaker of the Lok Sabha, Supreme Court, High Court and Subordinate Courts	13
Unit-III Electoral Politics	Political Parties, Pressure Groups and Electoral Politics	13
Unit-IV Decentralization and Devolution	Indian Federalism: (a) Centre-State Relations (b) National Integration (c) NDC and Niti Ayog	13
	Total	52

Selected Readings:

1. Subhash C Kashyap, 'Our Political System', National Book Trust of India, New Delhi, 2002.
2. Durga Das Basu, 'Introduction to the Constitution of India', Himalaya Publishing House, New Delhi, 1990.
3. C P Bhambri, 'Politics in India 1947-87', 'Vikas Publishers, New Delhi, 1988.
4. Paul R Brass, 'The Politics in India since independence', Cambridge University Press, New Delhi, 1992.
5. Bidyut Chakraborty, 'Forging Powers: Coalition politics in India', Oxford University Press, New Delhi, 2005.
6. Bowmbal K R and Choudhury L P, 'Aspects of democratic government and politics in India', Atma Ram and Sons, Delhi, 1968.
7. Rajani Kothari, 'Politics in India', Orient Blackswan, 2013.
8. Guha, Ramachandra (2008). 'India after Gandhi: the history of the world's largest democracy (Indian Ed.)'. India: Picador.

Course Outcome	By the end of the course students will have a conceptual clarity on <ul style="list-style-type: none"> • The key institutions and processes of governance in India. • Historical legacies and foundations of Indian state and democracy with reference to the making of the Indian Constitution.
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*PSC-VAC 305: FEMINISM: THEORIES AND PRACTICES

Subject Code	Subject Name	Credit	Internal Marks	External Marks
*PSC-VAC 306	FEMINISM: THEORIES AND PRACTICES	4	---	----
Objectives	This course is designed to provide students with a genealogy of feminist theories and concepts, by examining the history of ideas on and different theoretical and disciplinary approaches to the study of women and gender. How has women's oppression been theorised by deploying new concepts or theoretical frames? The objective of this paper is to analyse the power dimension of women in both public and private sphere from gender perspective. It will focus on the question of gender and its relationship with social and political structure and process with specific importance on emerging feminist discourse and its challenge to gender inequality based on patriarchy			

Pre-Requisites	Basic Knowledge on the power dimension of women in both public and private sphere from gender perspective.
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Approaches to understanding Feminism: <ul style="list-style-type: none"> • The sex/gender distinction. Biologism Versus Social Constructivism • Understanding Patriarchy • Liberal, Socialist, Marxist, Radical Feminism, New Feminist Schools/Traditions 	13
Unit-II	History of Feminism <ul style="list-style-type: none"> • Origin of Feminism • Family in Contemporary India - Patrilineal and Matrilineal Practices. • Gender Relations in the Family, Entitlements and Bargaining, Property Rights 	13
Unit-III	Understanding Woman's Work and Labour <ul style="list-style-type: none"> • Sexual Division of Labour- Productive and Reproductive labour, • Visible - Invisible Work – Unpaid and Paid work 	13
Unit-IV	The Indian Experience <ul style="list-style-type: none"> • Social Reforms Movement and Position of Women in India • Women's Participation in Anti-Colonial And National Liberation Movements in India 	13
	Total	52

Suggested Readings:

- Jagger, Alison. (1983) Feminist Politics and Human Nature. U.K.: Harvester Press, pp. 25-350.
- Lerner, Gerda. (1986) The Creation of Patriarchy. New York: Oxford University Press.
- Rowbotham, Shiela. (1993) Women in Movements. New York and London: Routledge, Section I, pp. 27-74 and 178-218.
- Jayawardene, Kumari. (1986) Feminism and Nationalism in the Third World. London: Zed Books, pp. 1-24, 71-108, and Conclusion
- Lister, Ruth, Citizenship: Feminist Perspectives, Second Edition, Palgrave Macmillan, Houndmills, 2003.
- Lovenduski, Joni, Feminizing Politics, Polity Press, Cambridge, 2005.

Course Outcome	After reading this course the students will <ul style="list-style-type: none"> • Identify major trends and theorists in Women's and Gender Studies • Become familiar with key concepts in feminist theories and the debates associated with them. • Become familiar with significant writings in feminist theories both in India and elsewhere • Learn how to identify arguments from key texts, present them orally and in writing through assessments.
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Semester –IV

PSC E 401-(A) NEW SOCIAL AND POLITICAL MOVEMENTS IN INDIA (Elective)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC E 401-(A)	NEW SOCIAL AND POLITICAL MOVEMENTS IN INDIA	4	20	80
Objectives	Under the influence of globalization, development processes in India have undergone transformation to produce spaces of advantage and disadvantage and new geographies of power. A variety of protest movements emerged to interrogate and challenge this development paradigm that evidently also weakens the democratic space so very vital to the formulation of critical consensus. This course proposes to introduce, students to the conditions, contexts and forms of political contestation over development paradigms and their bearing on the retrieval of democratic voice of citizens. To introduce the Social and Political movements in the Post – independent India with special reference to mobilization politics like movements for the formation of States, agrarian movements, anti – caste movements and movements related to development issues. To help the students to develop the capability of standing the perspectives of three major ideological strands represented by agrarian movements, Anti – caste movements & Women’s movement. To help students to understand the impact of movements on shaping the pattern of politics.			
Pre-Requisites	Basic Knowledge on the new social and political movements in India			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Social and Political Movements: Concepts, Theories and Types. Social and Political Movements in India: Background, History and Debate	13
Unit-II	Peasant’s Movement: Genesis and Growth Tribal Movements: Issues and Dynamics	13
Unit-III	Dalit and Backward Caste Movement: Issues, Leaderships and organizations.. Women’s Movement: Gender Justice and Empowerment, Challenges to Women’s Movement- Fundamentalism, Caste, Violence, and Moral Policing	13

Unit-IV	Environmental Movements: Chipko Movement, Silent Valley Movement & Narmada Bachao Andolan. State, Civil Society and Social Movements in India.	13
	Total	52

Suggested Readings:

1. Basu, Amrita (edited): The Challenge of Local Feminism: Women's Movements in Global Perspective, New Delhi, 1999.
2. Shah Ghanshyam : Social Movements and the State, Sage Publications, New Delhi, 2002.
3. Shah Ghanshyam : Social Movements in India: A Review of the Literature, Sage Publications, New Delhi, 1990.
4. Mohanty Manoranjan (ed): Caste, Class and Gender, Sage Publications, New Delhi, 2004
5. Oommen, T.K., (ed): Social Movements (Vol I and Vol II) OUP, New Delhi, 2010.
6. Singh, K.S., : Tribal Movement in India
7. Gail, Omvedt: Reinventing Revolution: New Social Movements and the Socialist, 1993
8. Wilkinson Paul: Social Movements.
9. Rao, M.S.A., Social Movements in India, New Delhi, Manohar, 1981.
10. Desai, Neera (ed.), Decade of Women's Movement in India, Bombay Himalaya Publishing House, 1988.
11. Shah Ghanshyam , Caste and Democratic Politics in India, Delhi: Permanent Black , 2008.
12. Jaffrelot, Christophe India's Silent Revolution: The Rise of the Low Castes in North Indian Politics, Delhi: Permanent Black, 2011.
13. M.V. Nadarkarni : Farmer's Movement in India, Allied, New Delhi, 1987.
14. T. K. Oommen : Nation, Civil Society and Social Movements, Sage, Delhi, 2004.
15. Rajendra Singh (ed.): Social Movement, Old and New: A Post-Modern Critique, Sage Publishers, New Delhi, 2001.
16. Ashish Ghosh (ed.): Dalits and Peasants: The Emerging Caste-Class Dynamics, GyanSagar Publication, 1999.

Course Outcome	After reading this course the students will: <ul style="list-style-type: none"> • Know the importance of a study of social movements in understanding politics. • Know the difference between riot and social movement. • Know the common elements of different definitions of social movement. • Know the main components of social movements. • Know the difference between 'social' and 'political' movements.
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PSC E 401(B) LOCAL GOVERNMENT AND POLITICS IN INDIA (Core elective-Optional)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC E 401(B)	LOCAL GOVERNMENT AND POLITICS IN INDIA	4	20	80
Objectives	The paper contributes to the better understanding of local government its institutional structures, functioning and duties including those entrusted to them by the state or the centre and which are of interest to locals. Local government is the most important level of government. Its policies and programs impact residents, workers, and agriculture and its allied activities on a daily basis. It is the end point that connects society and the state. State and local governments			

	exercise important functions in the scheme of States. They plan and pay for most roads, run public schools, provide water, establish zoning regulations for their citizens. Local governments are established essentially to promote the common good; and the sole purpose of the offices within it is to serve the constituency by providing justice, infrastructure, livelihood, healthcare, and other public services. Local Government Studies is the study of local politics, policy, administration and public management by the local institutions viz., Panchayati Raj and Urban Governments.
Pre-Requisites	Basic Knowledge on local politics, policy, administration and public management by the local institutions viz., Panchayati Raj and Urban Governments.
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Units	Topics	Hours
Unit-I: Local Government and Decentralization	Meaning, Concept and Significance of Local Government in India (Urban and Rural), Constitutional Frame work relating to Local governments in India. Theories of Decentralization, Concept of Delegation, De-Concentration and Devolution: its Benefits. Significance of Development of Rural and Urban Institutions in India	13
Unit-II: Evolution of Local Governments	Local Governments (Urban and Rural): Evolution, Meaning, Features, Significance and Leadership. 73rd and 74th Constitutional Amendment Acts. Panchayati Raj Institutions: Composition, Functions, Sources of Income and Significance	13
Unit-III: Urban Local Governments	Urban Local Bodies: Varieties (Metropolitan Corporation, Municipal Corporation, Municipality, Town Panchayat) Meaning, Features, Role and Significance. 2. District Administration: Evolution, Features and Functions. District Collector: Colonial legacy, Revenue Administration, Functions and Position.	13
Unit-IV: Globalization and Local Government	State Finance Commission, State Election Commission. Urban-Rural Relationship and Problems. Globalization and Concept of Citizen Centric Administration: Features and Significance Citizen's Charter, Concept of Stake holders and Service Providing.	13
	Total	52

Suggested Readings:

1. Vaddiraju, Anil Kumar. (2017). Federalism and Local Government in India. Delhi: Studium Press Pvt.Ltd.
2. Singh, Pankaj. (2017). Rural Local Government in India. Allahabad: Kitab Mahal.
3. Dollery, Brian., & Robotti, Lorenzo. (2008). The Theory and Practice of Local Government

Reform. UK: Edward Elgar.

4. Singh. Vijandra, (2003). "Chapter 5: Panchayati Raj and Gandhi". Panchayati Raj and Village Development: Volume 3, Perspectives on Panchayati Raj Administration. Studies in public administration. New Delhi: Sarup & Sons.

5. Sachdeva, Pardeep. (2000). Urban Local Government and Administration in India. New Delhi: Kitab Mahal.

6. Singh, Hoshiar. (1997). Local Government in India, Britain, France and USA. Allahabad: Kitab Mahal.

7. Chandler, J. A. (1992). Local Government in Liberal Democracies: An Introductory Survey. New York: Routledge.

8. Singh Sahib., & Singh, Swinder. (1991). Local Government in India. Jalandhar: New Academic Publishing Co.

9. Sachdeva, Pardeep. (1991). Dynamics of Municipal Government and Politics in India. New Delhi: Kitab Mahal.

10. Mackenzie, W J. M. (1975). Explorations in Government Collected Papers 1951- 1968. UK: Palgrave Macmillan.

Course Outcome	<p>After reading thus paper the students will able</p> <ul style="list-style-type: none"> To know the objective and to help them to take voluntary interest in the elections of these institutions. To know the local politics, policy, administration and public management by the local institutions viz., Panchayati Raj and Urban Governments.
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PSC CE—402 (A): FOREIGN POLICY OF MAJOR POWERS
(Elective)

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
PSC E—402 (A)	FOREIGN POLICY OF MAJOR POWERS	4	20	80
Objectives	<p>The basic objective of this course is to:</p> <ol style="list-style-type: none"> Familiarise students with post world war-II political discourses in the world. To train the students and make them trace the ideas and links that direct the foreign policy formulations processes and orientations of major powers like the US, Russia, and China 			
Pre-Requisites	Basic knowledge of international relations, world history, foreign policy and political developments in the US, Russia and China.			
Teaching Scheme	Regular classroom lectures with periodic formative coursework like term paper, problem sets, case studies, report writing, mock exams and presentations will be done with an emphasis to develop coherence among students on both the conceptual understanding and the practical knowledge settings.			

Detailed Syllabus:

Units	Topics	Hours
Unit-I	<p>Foreign Policy Analysis: The Nature of Foreign Policy and Theoretical Analysis</p> <p>Phases of Foreign Policy: Foreign Policy during Cold War, Post-Cold War</p>	13

	and in New World Order	
Unit-II	US Foreign Policy: From Isolationism to Containment US and South Asia US and Middle East US and China Emerging Trends in US Foreign Policy and Asian Pivot	13
Unit-III	Foreign Policy of the Peoples Republic of China Determinants of Chinese Foreign Policy Sino-US Rapprochement Sino – Russian Relations Emerging trends in Chinese Foreign Policy	13
Unit-IV	Foreign Policy of the Russian Federation Major parameters in Russian Foreign Policy	13
Total		52

Essential Readings:

1. Almond, Gabriel, *The American People and Foreign Policy* (New York, 1950)
2. Aron, Raymond, *The Imperial Republic: The United States and the World* (New Delhi, 1974).
3. Baral, J.K., *Pentagon and American Foreign Policy-Making* (New Delhi, 1987).
4. Bell, Coral, *The Diplomacy of Détente* (New Delhi, 1977).
5. Fairbank, John K., *China Revisited* (London, 1974)
6. Gordon, Bernard K., *New Directions for American Policy in Asia* (London, 1990)
7. Kissinger, Henry, *American Policy- a Global View* (Singapore, 1982).
8. Nathan, James A. And James K. Oliver, *United States Foreign policy and world order* (Boston 1985)
9. Palmer, Norman D., *The US and India* (New York, 1984)
10. Starr, John Bryan, *The future of US-China Relations* (New York, 1981)
11. Chan Gerald, *Chinese Perspective on International Relations*, New Zealand, Houndsmill, Macmillan University Press, 1999.
12. Cronin Patrick M. *From Globalism to Regionalism: Sew Perspectives on US Foreign and Defence Policies*, Washington, National Defence University Press, 1993.
13. Gaddis Johan Lewis, *Strategies of Containment: A Critical Appraisal of Post War American National Security Policy*, Oxford, Oxford University Press, 1990.
14. GutjahrLothar. *German Foreign and Defence Policy after Unification*, Pinter Publishers, 1994.
15. Haas Richard N, *Intervention: The Use of American Military Forces in the Post Cold War World*, New York, Carnegie Endowment of International Peace, 1998.
16. John Dumbrell, *American Foreign Policy: Carter to Clinton*, Houndsmill, Macmillan, 1997.
17. Kanet Roger E and Alexander V. Kozhemiakin. *The Foreign Policy of Russian Federation*,
18. Houndsmill. Macmillan, 1997.
19. Larrabee Stephen. *The Two German States and European Security*, Houndsmill, Macmillan, 1999.
20. Sutter Robert G., *Shaping China's Future in World Affairs: The Role of U.S.* Boulder, Westview, 1996.
21. Whetten Lawrence L., *Germany East and West: Conflicts, Collaboration and Confrontations*,
22. New Jersey, Princeton University. Press, 1980.
23. Zwick Peter. *Soviet Foreign Relations: Process and Policy*. New Jersey, Prentice Hall, 1990.

Course Outcome	By the end of this course Students will able to know: i. The factors and mechanisms that guide foreign policy objectives of the major powers. ii. Understand the nature and orientation of Foreign Policy from the Cold war days and its evolution through the Post-Cold War world order to today. iii. The various challenges these powers posed before the world countries and what others must learn from them.
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PSC E-402(B): INDIA AND REGIONAL ORGANISATIONS
(Core elective-Optional)

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
PSC E-402(B)	PROBLEMS OF INTERNATIONAL RELATIONS	4	20	80
Objectives	This course has been designed to provide students with critical insights into the numerous dimensions of Regionalism and Regional Organisations, Understanding the conceptual and theoretical aspects of Process of Regionalism. It will deliberate upon India's strategic approach towards important emerging nations and established world powers in the present environment. A unique feature of the course will be its emphasis regional organisations such as SAARC, ASEAN, BRICS etc.			
Pre-Requisites	Basic knowledge of international relations and understanding of the current dynamics of the international politics			
Teaching Scheme	Regular classroom lectures with periodic formative coursework like term paper, problem sets, case studies, report writing, mock exams and presentations will be done with an emphasis to develop coherence among students on both the conceptual understanding and the practical knowledge settings.			

Detailed Syllabus:

Units	Topics	Hours
Unit-I Regionalism and Regional Organization	Understanding the Conceptual and Theoretical Aspects of Process of Regionalism and Regional Organization: Growth and Classification. Significance of Regional Organisations in India's Foreign Policy	13
Unit-II SAARC	Genesis and Growth, Issues and Concerns, Summit Diplomacy India's Role in SAARC, European Union	13
Unit-III India and South-East Asia	Background and Civilization Ties: Look East and Act East Policy of India India's Priorities: Security, Energy and Trade	13
Unit-IV India and BRICS	Understanding BRICS: Origin, Agenda and Influence India-BRICS Engagement New Development Bank and Impact of BRICS on India's overall Strategic interests.	13
Total		52

Reading List:

1. Oliver Stuenkel (2015) The BRICS and the future of Global Order, Lexington Press.

2. Uwe Becker,(Ed) (2014),The BRICS and Emerging Economics in Comparative Perspectives: Political Economy, Liberalisation and Institutional Change, Routledge, New York.
3. Bhabani Sen Gupta (1993) “SAARC: Asian Prospect and Problems of Intra-regional Coopeation”. South Asian Publishers, New Delhi.
4. Bhargava, K.K. and Lama M.P (2008) SAARC, 2015: Expanding Horizons and Forging Cooperation in a Resurgent Asia, New Delhi, Friedrich Ebert Stiflung.
5. Rama S Melkote, Regional Organisations: A Third World Perspectives, Sterling Publishers Pvt. Ltd., New Delhi, 1990.
6. Baldas Ghosal (ed.) 1996, India and South East Asia: Challenges and Opportunities, Konark Publishers, New Delhi.
7. Frederic Grare and Amitabh Matoo, (ed.) 2001 India and ASEAN: The Politics of ‘Look East’ Policy, Manohar Publisher, New Delhi
8. Sudhir Devare (2005) India and South East Asia – Towards Security Convergence, Institute of South East Asian Studies, Singapore.
9. Fredrik Soderbaum and Timothy M. Shaw (eds) Theories of New Regionalism: A Palgrave Reader, Palgrave Macmillan, New York,
10. Dash Kishore C, 2008, Origin and Evolution of SAARC: Regionalism in South Asia, Negotiating Cooperation, Institutional Structures, New York, Rutledge.
11. Rumel Dahiya and Udai Bhanu Singh, 2015, Realising the ASEAN-India Vision for Partnership and Prosperity, Pentagon Press,New Delhi

Course Outcome	<p>This course will enable students to:</p> <ul style="list-style-type: none"> • Develop an in-depth examination of the issues and problems associated with increasing world interdependence. • Develop theoretical orientation to understand the causes of problems and possible solutions within international security architecture. • To comprehend major issues of global concern and international responses hitherto.
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**PSC E 403 (A): GOVERNMENT & POLITICS IN ODISHA
(Elective)**

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC E 403 (A):	GOVERNMENT AND POLITICS IN ODISHA	4	20	80
Objectives	This course expects the students to study one state in an in-depth manner to understand how the political process evolves at the State level. It will also allow the students to do assignments based on field studies. The study is to be done from socio- historical as well as political economy perspectives. The course seeks to sensitize students to the changes in the political process over the period of over half a century from 1936 to the present. This Course aims to provide knowledge on political culture, institutional governance and variation in Internal Political Pattern within the state of Odisha. It focuses on regional political parties and pattern of voting behavior among the people of Odisha. It also focuses on the political history of the state of Odisha.			
Pre-Requisites	Basic Knowledge on the government and politics in Odisha			
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.			

Detailed Syllabus:

Units	Topics	Hours
Unit-I	<ul style="list-style-type: none">The Odia Movement and Emergence of Odisha as a separate statePolitical Culture of Odisha.	13
Unit-II	<ul style="list-style-type: none">Election and Voting Behaviour: Elections in OdishaCoalitional Politics in Odisha	13
Unit-III	<ul style="list-style-type: none">Role of Regional Political Parties: Ganatantra Parishad, Jana Congress, Utkal Congress, Biju Janata Dal.Politics of Regional and Sub-Regional Development in Odisha.	13
Unit-IV	<ul style="list-style-type: none">Women Politics: Political Participation of Women.Scheduled Castes: Leadership and Political ParticipationScheduled Tribes: Leadership and Political Participation	13
Total		52

Suggested Readings:

- Harihara Das, B.C. Choudhury, "Federal and State Politics in India,, Discovery Publication, New Delhi, 1990.
- J.K.Mahapatra, "Factional Politics in India", Chugh Publication, Allahabad, 1985.
- Sukadev Nanda, Coalition Politics in Odisha, Sterling Publishers, New Delhi, 1979.
- Sunit Ghosh, Odisha in Turmoil:A Study of Political Developments, Book land International, Bhubaneswar, 1979.
- P. Padhy, (ed.) Indian State Politics, B. R. Publishing Corporation, Delhi, 1985.
- B. K. Patnaik, "The Politics of Floor Crossing in Odisha", Santosh Publication, Cuttack, 1985.
- B.B Jena and J. K. Baral, "Government and Politics in Odisha", (ed), Print House, Lucknow: 1988.
- D. Bhuyan, and S. Muni, Coalitional Politics in Odisha, Abhijeet Publications, New Delhi: 2010.
- D. Bhuyan, and Dayanidhi Parida, "Role of Regional Parties in Odisha", Abhijeet Publication, New Delhi: 2010.
- D. Bhuyan, Odisha Government and Politics: Institutions and processes, A. K. Mishra Publishers Pvt. Ltd, Cuttack

Course Outcome	By the end of the course students will have a conceptual clarity on Political culture, institutional governance and variation in Internal Political Pattern within the state of Odisha. The political history of the state of Odisha.
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PSC E 403(B): POLITICAL ECONOMY AND DEVELOPMENT ADMINISTRATION IN ODISHA (Elective)

Subject Code	Subject Name	Credit	Internal Marks	External Marks
PSC 403 (B):	POLITICAL ECONOMY AND DEVELOPMENT ADMINISTRATION IN ODISHA	4	20	80

Objectives	This course examines the political economy of Odisha. Throughout the course we will study many possible determinants of economic growth including institutions, human capital, trade, and financial development. We will also examine various strategies that governments could employ to promote growth, such as poverty relief programs, public investment in education, intellectual property right protection, and industrial policies. The course is organized into two broad segments: 1) development in the long run, which focuses on history, political systems, and economic institutions, and 2) development in the short run, which analyzes the impact of poverty relief programs, Union government's aid, international trade, and financial crisis.
Pre-Requisites	Basic Knowledge on political economy of the state of Odisha
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.

Detailed Syllabus:

Units	Topics	Hours
Unit-I Introduction to Political Economy	1. Meaning, Nature, Significance and Scope of Political Economy 2. Political Economy, Globalisation and Nation States Political Economy of Odisha- Governance and Economic Stability	13
Unit-II: Political Economy and Domestic Politics	Economic Structure of Odisha, Agrarian Policy of Odisha; Issue of Backwardness and Development of the State	13
Unit-III: Political Economy and Domestic Politics	Industrial induced displacement. Challenges to the development of the Scheduled Castes and the Scheduled Tribes and backward classes	13
Unit-IV: Political Economy and Regionalism	Regional imbalances in Odisha and policy measures to remove regional imbalances, Economic Reforms and Economic transitions in Odisha Poverty; poverty trap and the need for external intervention; issues with micro intervention programs;	13
Total		52

Suggested Readings:

1. Mill, John Stuart. (2012). Principles of Political Economy. Create Space Independent Publishing Platform.
2. Mill, John Stuart, & Riley, Jonathan. (2008). Principles of Political Economy: and Chapters on Socialism. London: Oxford University Press.
3. Weingast, Barry R. & Wittman, Donald. (2008). The Oxford Handbook of Political Economy. United Kingdom: OUP Oxford.
4. Weingast, Barry R. & Wittman, Donald A. (2006). Oxford The Oxford Handbook Of Political Economy. USA: Oxford University Press.
5. Payne, (2006). New Political Economy. London: Routledge.
6. Usher, Daniel. (2003). Political Economy. New Jersey: Wiley-Blackwell.
7. Albritton, Robert. (2003). New Dialectics and Political Economy. UK: Palgrave Macmillan.
8. Chandhoke, Neera. Priyadarshi, Praveen. (1999). Contemporary India: Economy, Society,

- Politics. London: Pearson.
9. Bardhan. Pranab, (1998). The Political Economy of Development in India. New Delhi: oxford University Press.
 - Barro, Robert. 1973. "The Control of Politicians: An Economic Model." Public Choice.
 10. Dunning, Thad, and Janhavi Nilekani. 2013. "Ethnic Quotas and Political Mobilization: Caste, Parties, and Distribution in Indian Village Councils." American Political Science Review. 107(1): 35-56
 11. Bardhan, Pranab (1994) : The Political Economy of Development in India; Oxford University Press, New Delhi
 12. C.T. Kurian (1978) : Poverty Planning and Social Transformation - An Alternative in Development Planning Allied Publishers, New Delhi
 13. V. M. Dandekar : The Indian Economy 1947-97; transforming traditional Agriculture Vol. I'
 14. Bimal Jalan : Indian Economic Crisis : The Way Ahead; Oxford University Press, New Delhi 1992
 15. Bimal Jalan ,India's Economic Policy Preparing for the 21st Century : Penguin. New Delhi, 1996.
 7. A. P. 'Thirwall' Growth and Development, 6th Edition Macmillan Press Ltd., 1999.
 8. Vijay Joshi: IMD Little; India's Economy Reforms; Oxford University Press. New Delhi, 1991-2001.
 16. Usha Kapila, Indian Economy since Independence; Vol. I, II & III, Academic Foundation. New Delhi.
 17. Usha Kapila, Recent Developments in Indian Economy, Part 3 & 4 Academic Foundation. New Delhi. 1994 & 95.
 18. Robert. E. B. Lucas and Gustar. F.; Indian Economy - Recent Development and Future Prospects. Oxford University Press, New Delhi, 1989
 19. Amartya Sen, Poverty and Famine - An Essay on Entitlement and Deprivation Oxford University Press. New Delhi, 1982.

Course Outcome	<p>to provide students with basic conceptual tools and frameworks for analyzing economic development issues;</p> <p>to give students a basic understanding of the economic development process in several regions of the world, and</p> <p>to give students a chance to practice academic debate on complex economic issues.</p> <p>The evaluation of the course will be based on two exams, a group project, homework assignments, and class participation.</p> <p>What do we mean by saying that economic outcomes are shaped by political constraints or politics?</p> <p>Do individuals behave the same or differently in economic models and political models? What are the fundamental questions in studying political economy?</p>
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PSC C-404: RESEARCH METHODOLOGY

Sub. Code	Subject Name	Credit	Int. Mark	Ext. Mark
PSC C-404:	RESEARCH METHODOLOGY	4	20	80

Objectives	To familiarize students with the basic concepts and approaches to the study of research methodology. To acquaint students with the basics of research methods, techniques, and approaches and to assist in the accomplishment of exploratory as well as result oriented research studies. To help students to identify the research problem and start asking the right questions with a goal of improving their ability to make a logical argument. To assist students to learn various research techniques (qualitative and quantitative). To train students in the process of writing various academic and popular writings. To sensitize students of research ethics.
Pre-Requisites	Basic knowledge of inquiry and problem solving. Workable knowledge of statistics and computer application
Teaching Scheme	Regular classroom lectures with periodic formative coursework like term paper, problem sets, case studies, report writing, mock exams and presentations will be done with an emphasis to develop coherence among students on both the conceptual understanding and the practical knowledge settings.

Detailed Syllabus:

Unit	Topics	Hours
Unit – I: Understanding Social Science Research	1. Meaning and Need for Research, Types of Research: Fundamental and Applied 2. Political Science Research: Its History and Utility 3. Traditional and Scientific Methods of Research	13
Unit – II: Research Design	1. Meaning and Types of Research Design, Formulation of Research Problem 2. Literature Review: Sources and Use of Information Technology 3. Hypothesis: Formulation, Characteristics and Types	13
Unit – III: Techniques of Data Collection	1. Research Techniques: Qualitative and quantitative research 2. Methods of Data Collection 3. Survey: (Meaning, Types, Steps and Limitations) Observations, Questionnaire, and Interviewing, Sampling	13
Unit- IV Data Analysis and Report Writing	1. Analyzing primary and secondary documents 2. Data presentation and preliminary analysis, interpretation of data. 3. Report Writing. 4. Presenting the Material: citation, references, notes	13
Total		52

Essential Readings:

1. Ahuja, Ram. Research Method, Rawat Publication, New Delhi, 2001
2. Art, Robert J. and Jervis, Robert International Politics: Enduring Concepts and Contemporary Issues, Longman, 2010
3. Dhiman, AK and SC. Research Methodology, EssEss Publication, New Delhi, 2002
4. Fowler, Flyod J. (Jr). Survey Research Methods, Sage, Beverley Hills, 1984.
5. Gerring, John 2004. "What is a Case Study and What is it Good for?" American Political Science Review 98, pp. 341-352
6. Kuhn, Thomas, The Structure of Scientific Revolution, Chicago: University of Chicago Press, 2012. (50th edition).
7. Popper, Karl, Open Society and Its Enemies, New Jersey: Pentagon University Press, 2013.

8. Kohari, C. R and Garg, Research Methodology: Methods and Techniques, New Age International Publisher, New Delhi, 2019 (4th edition).

Course Outcome	<p>After end of their M.A programme the students will be:</p> <ul style="list-style-type: none"> • Familiar with the basic concepts of research methodology. • Acquainted with the basics of research methods, techniques and approaches of research. • Identify the research problem and formulate research questions and hypothesis. • The process of writing various academic and popular writings. • Fundamentals of research ethics.
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PSC C-405: PROJECT WORK (REPORT IN FORM OF DISSERTATION & VIVA)

Subject Code	Subject Name	Credit	Total Marks
PSC C-405:	PROJECT WORK (REPORT IN FORM OF DISSERTATION & VIVA)	4	100
Objectives	A Dissertation tests the ability of a student to carry out an independent research. In broad ways it demonstrates that a student is capable of identifying an area of interest, able to explore the research area and use the appropriate research tools. Since a dissertation involves a different set of ideas or different point of views, it enhances the critical, analytical and research skills of a student.		
Pre-Requisites	Basic knowledge of inquiry and problem solving. Workable knowledge of statistics and computer application		
Teaching Scheme	Regular classroom lectures with periodic formative coursework like term paper, problem sets, case studies, report writing, mock exams and presentations will be done with an emphasis to develop coherence among students on both the conceptual understanding and the practical knowledge settings.		
Course Outcome	<p>By the end of the course students will be able to</p> <ul style="list-style-type: none"> • Identify an area of interest, able to explore the research area and use the appropriate research tools. • It will enhance the critical analytical and research skills of a student. On successful completion of the course students will be able to: • Demonstrate a sound technical knowledge of their selected project topic. • Undertake problem identification, formulation and solution. • 46. Demonstrate the knowledge, skills and attitudes of a professional researcher. 		

PSC AC: CULTURAL HERITAGE OF SOUTH ODISHA

Subject Code	Subject Name	Credit	Marks
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Non-Credit Paper	CULTURAL HERITAGE OF SOUTH ODISHA (ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସଂସ୍କୃତିକ ବିଭବ)	4	50
Objectives (ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ)	Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as 'BHANJA BIHAR'. South Odisha is the adorable storehouse of literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha. (ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ମହାନାୟକ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜ । ବ୍ରହ୍ମପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ ତାଙ୍କ ନାମରେ 'ଭଞ୍ଜବିହାର' ଭାବରେ ନାମିତ । ଗଞ୍ଜାମ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶା ସମଗ୍ର ରାଜ୍ୟର ବୁଧସଂସ୍କୃତିର କେଳିସର। ଏହାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-ଲୋକପରମ୍ପରା ସର୍ବଭାରତୀୟ ସ୍ୱୀକୃତିପ୍ରାପ୍ତ । ଏହାକୁ ଦୃଷ୍ଟିରେ ରଖି ବ୍ରହ୍ମପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟେ ସ୍ନାତକୋତ୍ତର ଶ୍ରେଣୀର ସମସ୍ତ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାହିତ୍ୟିକ ପ୍ରତିଭା ଏବଂ ଏହି ଅଞ୍ଚଳର କଳା, ସଂସ୍କୃତି, ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ସାଧାରଣ ଧାରଣା ପ୍ରଦାନ କରିବା ପାଇଁ ଏପରି ଅଧ୍ୟୟନ ବ୍ୟବସ୍ଥା କରାଯାଇଛି।)		
Pre-Requisites	Basic knowledge on Kabi Samrat Upendra Bhanja, Other Litterateurs of Ganjam and Cultural Heritage of Ganjam		
Teaching Scheme	Regular Classroom lectures along with assessment of students by means of oral & PPT presentation, group discussion, term paper etc to have both conceptual clarity as well as practical understanding on the subject.		

Detailed Syllabus:

Unit	Topics	Hours
Unit-I	Literary works of Kabi Samrat Upendra Bhanja କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜଙ୍କ କୃତି ଓ କୃତିତ୍ୱ	13
Unit-II	Other Litterateurs of South Odisha ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାରସ୍ୱତ ସାଧକ	13
Unit-III	Cultural Heritage of South Odisha ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ବିଭବ	13
Unit-IV	Folk and Tribal Traditions of South Odisha ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଆଦିବାସୀ ଓ ଲୋକପରମ୍ପରା	13
	Total	52

Course Outcome (ପାଠ୍ୟକ୍ରମର ନିଷ୍ପତ୍ତି)	The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale. (ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ଏହିପରି ଏକଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଦିଗରେ ପାଠଦାନ କରିବା ଦ୍ୱାରା କେବଳ ଯେ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜ ଓ ଦକ୍ଷିଣ ଓଡ଼ିଶାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-ଆଦିବାସୀ ଲୋକ ଜୀବନ ଓ
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	<p>ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଛାତ୍ରଛାତ୍ରୀ ସଚେତନ ହୋଇପାରିବେ; ତାହାନ୍ତୁହେଁ, କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜଙ୍କ ସହିତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାହିତ୍ୟିକ ପରିମଣ୍ଡଳ ଏବଂ ଏହି ଅଞ୍ଚଳର ସାଂସ୍କୃତିକ ବିଭବ ଓ ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଛାତ୍ରଛାତ୍ରୀମାନେ ମଧ୍ୟ ସମ୍ୟକ ଜ୍ଞାନ ଆହରଣରେ ବ୍ରତୀ ହୋଇପାରିବେ।)</p>
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BERHAMPUR UNIVERSITY

**COURSES OF SYLLABUS
P.G (APPLIED PSYCHOLOGY)**

SESSION: 2021-2023

For Admission Batch: 2021

RM

P.G. APPL. PSYCHOLOGY

Sl.No	Paper Code	Title of the paper	Total Marks (TE+IAE)	No of Credits
FIRST SEMESTER(500 MARKS)			20 CREDITS	
1	CC101	Basic Psychological Processes	80+20	04
2	CC102	Life Span Developmental Psychology	80+20	04
3	CC103	Statistics in Psychology	80+20	04
4	CC104	Applied Social Psychology	80+20	04
5	CC105	Psychological Practical & SPSS Package	(50+50)100	04
Total			500	20
SECOND SEMESTER (500 MARKS) 20 CREDITS				
6	CC201	Research Methodology	80+20	04
7	CC202	Educational Psychology	80+20	04
8	CC203	Organizational Behaviour	80+20	04
9	CC204	Human Resource Management (H R M)	80+20	04
10	CC205	Practical	100	04
THIRD SEMESTER (500 MARKS)20 CREDITS				
11	CC301	Positive Psychology	80+20	04
12	CC302	Clinical Psychology	80+20	04
13	CC 303	Counselling Psychology	80+20	04
14	CC 304	Health Psychology	80+20	04
15	CC 305	Practical	100	04
FOURTH SEMESTER (500 MARKS)20 CREDITS				
16	CC401	Applied Psychology -1	80+20	04
17	CC402	Applied Psychology- 2	80+20	04
18	CC403	Applied Psychometry	80+20	04
19	CC 404	Observation and Seminar Presentation	50+50=100	04
20	CC 405	Project work/Field Study (Clinical/Counselling /Health Psychology)	100	04

Semester - I

Paper I(CC-101) BASIC PSYCHOLOGICAL PROCESSES

100 marks (4 Credits) (80+ 20 IAE)

2022

Unit 1

SH

Learning and Motivation : Principles and application of Classical conditioning, Operant conditioning, Observational Learning; Learning Strategies , Learning in digital world, Self-regulated learning , perspectives of motivation, types of motivation , motivational conflict .

Unit 2

PIB

Memory and Intelligence : Processes of memory: Encoding, storage, Retrieval. Theories of Memory- Information Processing, Levels of Processing, Parallel Distributed Processing. Stages of Memory: Sensory Memory, Short-term Memory/Working Memory, Long-term Memory. Forgetting: Theories of ~~memory~~ ^{forgetting}. Intelligence: Theories of Intelligence, Spearman, Gardner, Sternberg, Thurstone, PASS Theory (Dr.J.P Das), Giftedness, Mental Retardation, Emotional Intelligence., Artificial Intelligence

Unit 3

AM

Perception and Problem Solving : Perceptual processing , Role of Attention in perception , Perceptual organisation , perceptual sets , perceptual constancies , depth perception , distance and movement , perceptual illusion . Problem solving and decision making ; mental imagery , creative and critical thinking , nature and stages of creative thinking.

Unit 4

AT

Emotion and Personality: Meaning and nature of emotion, theories of emotion, emotion in everyday life- self conscious emotions, shame, guilt, embarshment and pride, positive emotional state and processes . Personality: Theories of Personality: Psychoanalytic- Freudian, Neo-Freudian; Behaviouristic, Humanistic, Trait-cum-Type Theory. Assessment of Personality: Interviews, Personality Inventory and Rating scales, Projective Tests.

Completed

Completed on

BOOKS:

- Baron, R. A. (2002). Psychology (5th Edition), New Delhi: Pearson Education.
- Zimbardo, P.G. & Weber, A.L. (1997 Ed.)- Psychology- New York, Harper Collins College Publishers.
- Panda, K.C. & Panda, N. (2015). Perspective in General Psychology and Life: A Basic Text (Vol.I). Cuttack, KitabMahal.
- Ciccarelli, S.K., & Mayer, G, E.(2010) Psychology. South Assian Edition ,New Delhi:Pearson Education
- Baron,R&Misra,G.(2013). Psychology. Pearson .
- Carr, A. (2008) . Positive Psychology: The science of happiness and human strength.NewDelhi:Routledge.
- Barret, L. F, Niedenthal, P. M., &Winkielman (2005). Emotional &Consciousness.New York: Guilford Press.

2022
GENERAL PSYCHOLOGY (CC-102)

Paper II (CC-102)
LIFE SPAN DEVELOPMENTAL PSYCHOLOGY
100 marks (4 credits) (80+ 20 IAE)

AM Unit-1: Understanding development: Research designs, theoretical perspectives of human development.

SH Unit- 2: Childhood: attachment, maturation, psycho-social crises, cognitive development, disorders of childhood- ADHD, autism and Dyslexia.

PB Unit-3. Adolescence: physical, social and cognitive development, Adolescence Sexuality gender identity, adolescents at risk, problems during adolescence.

AT Unit- 4. Adulthood: Physical development, Beginning of a family, work, gender role shifting, mid-life crises, Old age-theories, and illnesses & problems during Old age.

BOOKS:

1. Sigelman, C.K. & Rider, E. (2008), Life-span Human Development (6th edd.). UK, Wadsworth publishing company
2. Papalia, D. Olds and Feldman (2009), Human Development (11th edd.). New York, McGraw-Hill
3. Berger, (2001) Life span development

Paper III (CC-103)
STATISTICS IN PSYCHOLOGY
100 marks (4 Credits)
(80+20)

2022
SH Unit-1: Psychological Statistics, Descriptive & Inferential Statistics, Variable and constants, measurement scales, types of statistics-parametric and non-parametric statistics.

AT Unit-2: Nature and the properties of Normal Probability distribution; standard score and the normal curve, the standard normal curve- finding areas/scores when the area/score is known, the normal curve as a model for sampling distribution- divergence from normality (skewness and kurtosis).

AM Unit -3: Dealing with Nominal scale: Chi-Square, Ordinal scale: Friedman's ANOVA, Wilcoxon signed rank test, Mann-Whitney U Test, Kruskal Wallis H, Correlation- Product Moment and Rank Order Correlation.

PB Unit- 4: Inferential Statistics (Numerical illustration) : interval and the ratio scale - 't' test, 'F' test, ANOVA- one way and two way ANOVA, Regression analysis.

BOOKS -

- Aron, A., Aron, E.N., & Coups, E.J. (2007). Statistics for Psychology (4th Ed.). Delhi: Prentice Hall of India.
- King, B.M. & Minium, E.W. (2007). Statistical Reasoning in the Behavioral Sciences (5th Ed.). Noida: Wiley.

- Mangal, S.K. (2012). Statistics in Psychology and Education (2nd Ed.). Delhi: Prentice Hall of India.
- Howitt, D and Cramer, D. (2011). Introduction to Statistics in Psychology. London, UK: Pearsons Education Ltd.
- Chadha, N.K. (1991). Statistics for behavioural and social sciences. Reliance Publication House; New Delhi.
- Siegal, S. (1956). Non Parametric Statistics. NY; McGraw Hill.
- Garret, H.E. (1981). *Statistics in Psychology and Edn.*

Paper IV(CC104)
APPLIED SOCIAL PSYCHOLOGY
100 marks (4 Credit) (80+ 20 IAE)

AT Unit 1: Introduction: Nature of Applied Social Psychology, Social influences on behaviour, Interpersonal attraction and close relationships, cultural foundations of relationships, Levels of Analysis, Overview of methods.

SH Unit 2. Pro-social behaviour, Altruism – The many faces of altruism, explaining altruism, Discrimination and Diversity (Economic, Culture, Religious, Social, Gender)

AM Unit 3. Applications: Intergroup Relations (Prejudice, Conflict, Conflict Management); Health; Environment and Legal System

PB Unit 4. Intervention and Evaluation: Process of Intervention; Need for evaluation for effective Programmes; Case Studies in Indian Context

BOOKS:

- Baumeister, R.F. & Bushman, B.J. (2013). Social Psychology and Human Nature. Belmont, California: Wadsworth.
- Aronson, E., Wilson, T.D., Akert, R.M., & Sommers, S.R. (2017). Social Psychology, 9th edition, Delhi:
- Pearson. Myers, D., Sahajpal, P., Behera, P. (2011). Social Psychology (10th Edition). New Delhi: McGraw Hill.
- Mikkelson, B. (1995). Methods for Development Work and Research: A Guide for Practioners. New Delhi: Sage.
- Schneider, F.W., Gruman, A., Coult, L.M. (Eds.). (2012). Applied Social Psychology: Understanding and Addressing Social and Practical Problems. New Delhi: Sage Publications.
- Smith, P.B., Bond, M.H., & Kagitcibasi, C. (2006). Understanding Social Psychology Across Cultures. New Delhi: Sage Publications
- Kapur, P., & Misra, G. (2011). Social identity in India: Continuities and fractures. In G. Misra (Ed.), Contemporary Indian Psychology. New Delhi: Oxford University Press

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Paper V(CC-105)
Practical

Paper V(CC-105) Practical

PSYCHOLOGICAL PRACTICAL AND SPSS PACKAGE
100 marks (4 Credit)
Practical: (50 MARKS)

The students are required to understand the practical on the basis of SEM-1 syllabus and use any two of the practical to mentioned the following practical syllabus.

1. Cognitive Assessment Test (AM)
2. 16 PF/Neo-FFI (AT)
3. Emotional Intelligence Test (MEII) (BH)
4. WISC/WAIS-'P'(Indian adaptation)/DBT (PB)

SPSS Package: (50 MARKS) ⇒ A.M ✓

The students will be given exposure on SPSS Package.

BOOKS -

Field, A (2009). Discovering Statistics using SPSS (3rd Ed). New Delhi; Sage

Semester -II ✓

Paper (CC-201) ✓

RESEARCH METHODOLOGY

100 marks (4 Credit) (80+ 20 IAE)

AT Completed

Unit- 1. Basics of research in Psychology: What is Psychological Research? The Goals of Psychological Research, Paradigms of Research, Principles of Good Research; Current Issues in Psychological Research – Replication Crisis, Publication and Ethics; Research Traditions: Quantitative and Qualitative Orientations Towards Research and their steps, Comparing Qualitative and Quantitative Research Traditions, Formulating a problem and developing a testable research question/research hypothesis

2022

AT

AM

Unit -2. Research Design- Types of research design; Experimental, quasi-experimental and single-subject Designs, sampling technique; probability & non -probability sampling, ethical guidelines

PB

BD

Unit-3. Methods and tools of Data Collection: Qualitative and quantitative data , Observation method, Interview; case study, focus group discussion, Questionnaires, Projective techniques, Content Analysis

BD Completed

PB

Unit-4. Steps of research, report/article/journal/thesis writing.

AM ✓

BOOKS:

- Anastasi, A., & Urbina, S. (2017). Psychological Testing, 7 th Edition. Noida: Pearson India.
- Bryman, A. (2004). Quantity and Quality in Social Research. London, UK: Routledge.
- Chadha, N.K. (2009). Applied Psychometry. New Delhi: Sage.
- Gregory, R.J. (2017). Psychological Testing: History, Principles, and Applications (7thEd.). New Delhi: Pearson India.

- Murphy, K.R. & Davidshofer, C. O. (2019). Psychological Testing: Principles & Applications (6th Ed.). New Jersey: Pearson.
- Neuman, W.L. (2006). Social Research Methods: Qualitative and Quantitative Approaches (6th Ed.) Boston: Pearson Education.
- Willig, C. (2001). Introducing qualitative research in psychology: Adventures in theory and method. Philadelphia: Open University Press.

EDUCATIONAL PSYCHOLOGY(CC202)
100 Marks (4 Credit) (80+ 20 IAE)

Unit-1: Sociocultural Diversity and Education

Culture, socioeconomic status, Ethnicity, Language issues, Multi-cultural education, culturally relevant teaching; Gender, Views on Gender Development, Gender Stereotyping, Gender-role classification, eliminating gender bias.

Unit- 2: Motivation, Teaching and Learning

Exploring motivation; Nature of motivation; Perspectives on motivation; Motivation to achieve; Motivation, Relationships and Socio-cultural contexts; How to reach low achieving students.

Unit-3: Managing the classroom- Need for management; Designing the physical environment of the classroom; Creating positive environment for learning; Being a good communicator; Dealing with problem behavior.

Unit-4: Classroom Assessment- The classroom as an assessment context; Traditional tests; Alternative assessments, Grading and reporting performance; Computers and assessment.

recommended

1. Santrock, J.W. () Educational Psychology
2. Gage, N.L. & Berliner, D.C. (2009) Educational Psychology(5th edd.), Boston, Houghton Mifflin
3. Woolfolk, A. (2004). Educational Psychology(9th edd.). Boston, Pearson
4. Mangal, S.K. (2002), Advanced Educational Psychology(2nd edd.), New Delhi, PHI learning private limited

ORGANIZATIONAL BEHAVIOUR(CC203)

100 marks (4 Credits) (80+ 20 IAE)

Unit 1. Defining Organizational behavior foundations of OB; importance of OB; OB model; Evaluation of OB.

Unit 2. Organizational culture, creativity and innovation: meaning & definition; How is culture created? Creativity in organizations- characteristics of creative individuals, methods of enhancing creativity; Innovation in organizations

Unit 3. Leadership: Nature of leadership; Leadership models; Leadership styles; contemporary issues in leadership.

Unit 4. Team Building and conflict management-Team dynamics; nature of teams; team's vs groups; Effective team work.Type of conflicts; Resolving conflicts; conflict management styles; Beyond conflict resolution.

BOOKS:

1. Aswathiappa, K. (2009) Organizational Behaviour, Himalya Publishing House
2. Greenberg, J. & Baron, R.A., (2003) Behaviour in organizations
3. Robbins (2003). Organizational behaviour
4. Luthans (2007). Organizational behaviour

HUMAN RESOURCE MANAGEMENT (CC204)

100 marks (4 Credits) (80+ 20 IAE)

- Unit- 1.** Meaning and scope of Human Resource Management; Difference between HRM and HRD; Strategic role of HRM; managing global human resources.
- Unit- 2.** Recruitment and placement-Job design; Job analysis; Employee testing and selection.
- Unit-3:** Training and Development-Training & Developing of employees; Performance management; Training and learning;
- Unit-4.** Organizational change and Development-Defining change; Models of change; organizational Culture and change; Power, politics and ethics in organizational development.

BOOKS:

1. Kandulla, S.R. Prentice Hall. (2002), Strategic Human Resource Development
2. Rao ,Human Resource Development (2000), , T.V. Sage
3. Quinn .& Quinn (2002), Management Ethics ,Sage

PRACTICAL (CC205-P)

100 marks (4 Credit)

The students are required to understand the practical on the basis of SEM-2 syllabus and use any two of the practical to mentioned the following practical syllabus.

1. Assessment of Creativity in children
2. Assessment of Adaptation and coping skills
3. Learning and decision making style
4. Group Affiliation

SEMESTER-III

POSITIVE PSYCHOLOGY (CC301)

100marks (4 Credits) (80+ 20 IAE)

Unit 1. Introduction: Positive Psychology: An Introduction, Perspectives on Positive Psychology: Western and Eastern, Character Strengths and Virtues, happiness and wellbeing .

Unit 2. Positive Emotional States and Processes: Happiness and Well being, Positive Emotions, Resilience ,prompting positive relationships; compassion ,forgiveness, gratitude and empathy.

Unit 3. Cognitive States and Processes: Self-efficacy, Optimism, Hope, Wisdom, Flow
Mindfulness -283

Unit 4. Applications: Work, Education, Ageing ,Health

BD

AM

196

216

BOOKS

BOOKS:

- Baumgardner, S.R., & Crothers, M.K. (2010). Positive Psychology. Upper Saddle River, New Jersey.: Prentice Hall.
- Carr, A. (2004). Positive Psychology: The Science of Happiness and Human Strength. London, UK: Routledge.
- Seligman, M.E.P. (2002). Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment. New York: Free Press/Simon and Schuster.
- Snyder, C.R., & Lopez, S.J.(2007). Positive Psychology: The Scientific and Practical Exploration of Human Strengths. Thousand Oaks, CA: Sage
- Compton, W.C., & Hoffman, E. (2012). Positive Psychology: The Science of Happiness and Flourishing. Wadsworth: Cengage Learning.
- Peterson, C. (2006). A Primer in Positive Psychology. New York: Oxford University Press

CLINICAL PSYCHOLOGY(CC302) 100 marks (4 Credits) (80+ 20 IAE)

- FB** Unit-1. Current paradigms in Psychopathology: Biological, psychoanalytic, humanistic and existential, learning and cognitive.
- AT** Unit-2. Classification and diagnosis: DSM and ICD. Issues in the classification of abnormal behaviour, psychological assessment: clinical interviews, psychological tests, behavioural and cognitive assessment.
- AM** Unit-3. Stress- Acute stress disorder, Post- Traumatic Stress Disorder (PTSD): adjustment disorder; Clinical reaction to stress , treating stress-related problems.
- BD** Unit-4. Anxiety Disorders: generalized Anxiety disorders: Phobias, Obsessive-Compulsive disorder, Interpreting and treating Anxiety disorders. Conversion and Dissociative Disorder

BOOKS:

1. Davison & Neale Abnormal Psychology, Wiley
2. Branon, Feist, Thomson & Wadsworth (2007) Introduction to Health Psychology,
3. Sarason & Sarason(). Abnormal Psychology , Pearson

COUNSELLING PSYCHOLOGY (CC 303) BASIC COUNSELLING PROCESSES 100 marks (4 Credits) (80+ 20 IAE)

- FB** Unit 1. Introduction: Nature and Goals; Types of counselling, Counselling as a profession: Professional Ethics (Latest Version Of American Counselling Association – ACA); The Effective Counsellor: Personality Characteristics; Status of Counselling Psychology in India
- BD** Unit 2; Therapeutic Process: Building Therapeutic Relationships; Working in a Therapeutic Relationship; Termination
- AT** Unit 3. Techniques of Counselling: Psychoanalytic Techniques; Humanistic Techniques; Behavioral Techniques; Cognitive Techniques; Indian Techniques: Yoga and Meditation
- AM** Unit 4. Applications: Child Counselling; Family Therapy; Career Counselling; Crisis Intervention: Suicide, Grief, and Sexual Abuse

BOOKS:

- Corey, G. (2009). *Counselling and Psychotherapy: Theory and Practice (7th Ed.)* New Delhi: Cengage Learning.
- Friedlander, M.L. & Diamond, G.M. (2012). *Couple and Family Therapy*. In E.M. Altmaier and J.C. Hansen (Eds.) *The Oxford Handbook of Counselling Psychology*. New York: Oxford University Press.
- Gladding, S. T. (2012). *Counselling: A Comprehensive Profession. (7th Ed)* New Delhi. Pearson.
- Hansen, J.C. (2012). *Contemporary Counselling Psychology*. In E. M. Altmaier and J.C. Hansen (Eds). *The Oxford Handbook of Counselling Psychology*. New York: Oxford University Press.
- Kapur, M. (2011). *Counselling Children with Psychological Problems*. New Delhi, Pearson.
- Seligman, L. & Reichenberg, L.W. (2010). *Theories of Counseling and Psychotherapy: Systems, Strategies, and Skills (3rd Ed)*. New Delhi: Pearson.
- Sharf, R. S. (2012). *Theories of Psychotherapy & Counselling: Concepts and Cases (5th Ed)*. Boston: Brooks/ Cole Cengage Learning. Udupa,

HEALTH PSYCHOLOGY(CC 304) 100 marks (4 Credits) (80+ 20 IAE)

BD Unit 1 Introduction to Health Psychology: Mind and Body Relationship, Components of Health: Social, Emotional, Cognitive and Physical Aspects, Relationship Between Health and Psychology, Cultural Construction of Health, Goals of Health Psychology, Bio-Psychosocial Model of Health, Indian Model of Health

AT Unit 2 Behavior and Health: Characteristics of Health Behaviour; Barriers to Health Behaviour; Theories of Health Behavior (Health -Belief Model, Theory of Planned Behavior, Stages of Change Model)

FB Unit 3 Health Promotion and Management: Exercise, nutrition, Indian Healing Techniques (Ayurveda, Traditional Healing), Stress and Coping

AM Unit 4 Interventions and Research in Health Psychology: Emotions, Culture and Health, Research on Health Psychology in India

BOOKS:

- Dalal, A.K. (2016). *Cultural Psychology of Health in India*. Delhi: Sage.
- DiMatteo, M. R., & Martin L. R. (2011). *Health Psychology*. Noida: Dorling Kindersley.
- Marks, D.F., Murray, M., Evans, B., & Estacio, E.V. (2011). *Health Psychology (3rd Edition)*. London: Sage.
- Sarafino, E.P., & Smith, T.W. (2016). *Health Psychology: Bi- psychosocial Interactions (9th Edition)*. New York: Wiley.
- Taylor, S.E. (2017). *Health Psychology (10th Edition)*. Delhi: Tata McGraw Hill.
- Allen, F. (2011). *Health Psychology and Behaviour*. Delhi: Tata McGraw Hill.
- Misra, G. (1999). *Stress and Health*. New Delhi: Concept.
- Sanderson, C.A. (2018). *Health Psychology: Understanding the Mind-body Connection (3rd Edition)*. London, UK: Sage Publishers.
- Wadhwa, S. (2017) (Ed.): *Stress in the Modern World*. Santa Barbara, California: Greenwood.

... New
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PRACTICAL (CC 305)
100 marks (4Credits)

The students are required to understand the practical on the basis of SEM-3 syllabus and use any two of the practical to mentioned the following practical syllabus.

- AT 1. DAT
- AM 2. Political Behaviour
- 3. Motivational Factors
- B.D 4. Assessment of Anxiety (Spielberger's)

SEMESTER-IV

Applied Psychology - I (Paper- CC401)
(Credits-4) Marks-100 (80+20)
Psychology: Issues and Applications

1. **Community Psychology:** Definition and concept of community psychology; Role of change; Use of Community psychologist in social change, Use of small groups in social action; and action for Arousing community consciousness and action for handling social problems; Group decision making and leadership for social change; Effective strategies for social change.

AT
AT
AM

2. **Rehabilitation Psychology:** Primary, secondary and tertiary prevention programs - role of psychologists ; Organizing of services for rehabilitation of physically, mentally and socially challenged persons including old persons, Rehabilitation of persons suffering from substance abuse, juvenile delinquency.

B.D

3. **Application of Psychology to disadvantaged groups:** The concepts of disadvantaged, deprivation; Social, physical, cultural and economic consequences of disadvantaged and deprived groups; Educating and motivating the disadvantaged towards development; Relative and prolonged deprivation.

AM

5. **Application of Psychology in Information Technology and Mass Media:** The present scenario of information technology and the mass media boom and the role of psychologists; Learning through IT and mass media; Multilevel marketing; Impact of TV and fostering value through IT and mass media; Psychological consequences of recent developments in Information Technology.

PB

Book:

Swain. Smarak (2010), Applied Psychology , New Delhi. New Vishal Publications

Applied Psychology - II (Paper-CC402)
(Credits-4) Marks-100 (80+20)
Psychology: Issues and Applications

1. **Psychology and Economic development:** Achievement motivation and economic development; Characteristics of entrepreneurial behavior; Motivating and training people for entrepreneurship and economic development; Consumer rights and consumer awareness, Promotion of entrepreneurship among youth including women entrepreneurs.

ATM

2. **Application of psychology to environment and related fields:** Environmental psychology- crowding; Population effects of noise, pollution and crowding; Population psychology: psychological and high population consequences of population explosion and high population density; Motivating for small family norm; Impact of rapid scientific and technological growth on degradation of environment. BD

3. **Application of Psychology in the field of Defence:** The concept of Military psychology, Aviation psychology and Psychological warfare. Role of Military psychologists in the defence, Selection, recruitment and training of personnel. Facilitating the process of adjustment of personnel to military life-Role of Counselling. Psychological disorders due to war. Human engineering in Defence AT

4. **Psychology of Gender:** Issues of discrimination, Management of diversity; Glass ceiling effect, Self fulfilling prophesy, Women and Indian society. PB

BOOK:

Swain, Smarak (), Applied Psychology, New Delhi. New Vishal Publications

(APPLIED PSYCHOMETRY)

(04 credits) PAPER -CC 403 AT MARKS 100 (out of 20)

Unit-1: Foundation of Psychometry: Basics of measurement theory, Errors of measurement, Speed versus Power Test, Criteria of Parallel test, nature of psychological testing and criteria of a good test-Norms BD

Unit-2 :Creating a test : Test/Scale construction, standardization, Item analysis and item response theory (IRT), AT

Unit-3 :Standardizing a test : Reliability, validity, Types of reliability and validity and its application, norms -issues and challenges AM

Unit-4 :Application of Test : Application of psychological testing in various settings- Educations, counselling and guidance, clinical, organisational and developmental PB

BOOKS:

- Anastasi, A. (1988). Psychological Testing. New York: MacMillan
- Minium, E.W., King, B.M. & Bear, G. (1993). Statistical Reasoning in Psychology and Education. New York: John Willey
- Kerlinger, F.N. (1983). Foundations of Behavioral Research. New York: Surjeet Publications
- Chadha, N.K (2009) .Applied Psychometry: New Delhi: Sage
- Guilford, J. P (1989) Psychometric Methods. NJ: John Willey
- Kline, T, J, B. (2005) Psychological Testing . New Delhi: Vistara Publication

Paper- (CC 404-P) (50+50= 100 marks) (04 credits)

(Observational Report & Seminar Presentation)

- a) Childs Home Observation and parental interview \rightarrow AT
- b) Seminar Presentation \rightarrow AM

COURSES OF STUDIES

IN

MASTER OF ARTS IN SANSKRIT



POST GRADUATE DEPARTMENT OF SANSKRIT

SBRG WOMEN'S (AUTONOMOUS) COLLEGE

BERHAMPUR, GANJAM

ODISHA, 760001

COURSE STRUCTURE OF PG SANSKRIT

SEMESTER	COURSE TYPE	COURSE CODE	COURSE NAME	CREDIT	TOTAL MARK (Mid + End)
SEM-I	CORE COURSE	SANS101	Vedic Literature	04	100(20+80)
		SANS102	Grammar	04	100(20+80)
		SANS103	Bharatiya Darsana	04	100(20+80)
		SANS104	Poetics	04	100(20+80)
		SANS105	Poetics	04	100(20+80)
	Total				20
SEM-II	CORE COURSE	SANS206	Ancillary Vedic Literature	04	100(20+80)
		SANS207	Grammar	04	100(20+80)
		SANS208	Grammar & Philology	04	100(20+80)
		SANS209	Sanskrit Plays	04	100(20+80)
		SANS210	Poetics	04	100(20+80)
	Total				20
SEM-III	CORE COURSE	SANS311	Contribution of Odisha to Sanskrit literature	04	100(20+80)
		SANS312	DTP in Sanskrit & Proof reading(Practical)	04	100
		SANS313	Research Methodology	04	100(20+80)
	*Elective-A	SANS314	Grammar -I	*04	*100(20+80)
		SANS315	Grammar -II	*04	*100(20+80)
	*Elective-B	SANS316	Sahitya -I	*04	*100(20+80)
		SANS317	Sahitya -II	*04	*100(20+80)
	*Elective C	SANS318	Veda-1	*04	*100(20+80)
		SANS319	Veda-2	*04	*100(20+80)
	*Elective D	SANS320	Darsana. 1	*04	*100(20+80)
		SANS321	Darsana. 2	*04	*100(20+80)
Total				20	500
SEM-IV	CORE COURSE	SANS422	Vastuvidya	04	100(20+80)
		SANS423	Scientific Literature in Sanskrit	04	100(20+80)
		SANS424	Dissertation	04	80+20=100
	**Elective-E	SANS425	Ethics in Sanskrit Literature	**04	**100(20+80)
		SANS426	Outline of Culture & Civilization in Sanskrit Literature	**04	**100(20+80)
		SANS427	Puranic literature	**04	**100(20+80)
		SANS428	Yoga for Personality Development and Stress Management	**04	**100(20+80)
	Total				20
Grand Total				80	2000

*Student can choose any ONE GROUP

** Student can choose any TWO

FIRST SEMESTER
Paper- 1
SANS101
VEDIC LITERATURE

- UNIT-I** Main theories regarding the Vedās : Maxmüller; A.Weber; Jacobi ; Balgangadhar Tilak; M.Winternitz ; Indian traditional views.
- UNIT-II -** Brāhamaṇa-Literature - Subject-matter; Vidhi and its types; Agnihotra; Agniṣṭoma; Darśapūrṇamāsa ; Yajña; Pañcamahāyajña.
- UNIT-III -** Āraṇyaka Literature
Vedāṅgas: Śikṣā; Kalpa; Vyākaraṇa; Nirukta; Chandas; Jyotiṣa
- UNIT-IV -** Upaniṣad Literature: Subject-matter and main concepts with special reference to the following Upaniṣads. Īśa; Kaṭha; Kena; Bṛhadārṇyaka ; Taittirīya; Śvetāśvatara

Core Readings:

1. New Vedic Selection (Part-I) (Ed.) Telang and Chaubey, Bharatiya Vidya Prakashan, New Delhi
2. Vaidika Sahitya aur Samskrti, Baladeva Upadhyaya, Chaukhamba, Varanasi

Suggested Readings:

- 1.Vaidika sahitya o Samskrti, A.C. Das, Grantha Mandira, Cuttack
2. Veda O Vaidika Prakarana (Ed) Pustak mandir, Berhampur.
3. History of Indian Literature Vol. I, M.Wintermitz, MLBD, New Delhi
- 4.Vaidik sahitya ki Ruparekha, Umashankar Sharma Rai, Chawkhamba Vidyaprasashan, Varanasi
5. Vaidika Sahitya O Samskrti, Bholanath Rout, Chitrotpala Publication, Salipur

FIRST SEMESTER
Paper- 2
SANS102
Grammar

- UNIT-I •** Smanja & Paribhasa Prakaranam (Laghusidhanta Kaumudi)
- UNIT-II - •** Ach Sandhih (Laghusidhanta Kaumudi)
- UNIT-III - •** Hal Sandhih (Laghusidhanta Kaumudi)
- UNIT-IV -** Bisarg Sandhih (Laghusidhanta Kaumudi)

Suggested Readings:

1. Lagusidhantakaumudi Banarsidass, Delhi
2. Lagusidhantakaumudi - Eng, S.C. Vasu, Motilal Banarsidass, New Delhi
3. Lagusidhantakaumudi -(Ed) S. R. Ray, Sanskrit Pustak Bhandar, Kolkata
4. Lagusidhantakaumudi - (Ed) Karaka - Bishnupada Bhattacharya
5. Lagusidhantakaumudi - (Ed) M.V. Mahashabde, Dadar Book Depot, Dadar, Bombay.
6. Lagusidhantakaumudi - (Ed) G.K. Dash & K. Dash, A.K. Mishra Agencies, Cuttack
- 7 Lagusidhantakaumudi (Samjna, Paribhasa and Karaka Prakarana) (Ed.) Minati Mishra, Vidyapuri. Cuttack
8. Lagusidhantakaumudi - (Ed) Samasa - Madhubala Sharma & J. Shastri, MLBD, Delhi
9. Lagusidhantakaumudi (Part I & II), Gopal Datta Pandey, Chowkhamba Surabharati Prakashan, Varanasi, 4th Edition, 1996.
10. Lagusidhantakaumudi (Part I & II), Govindacharya, Chowkhamba Publications, Varanasi.

FIRST SEMESTER

Paper- 3

SANS103

Bharatiya Darsana

- UNIT-I •** Īśvarakṛṣṇa : Sāṁkhyakārikā - Satkāryavāda, Puruṣasvarūpa, Prakṛtisvarūpa, Sṛṣṭikrama, Pratyaysarga, Kaivalya.
- UNIT-II - •** Sadānanda : Vedāntasāra - Anubandha-catuṣṭaya, Ajñāna, Adhyāropa-Apavāda, Lingaśarīrotpatti, Pañcīkaraṇa, Vivarta, Jīvanmukti
- UNIT-III - •** Annambhaṭṭa, Tarkasaṁgraha / Keśavamiśra; Tarkabhāṣā : Padārtha; Kāraṇa; Pramāṇa; (Pratyakṣa; Anumāna; Upamāna; Śabda), Prāmāṇyavāda, Prameya .
- UNIT-IV -** Patañjali ; Yogasūtra - (Vyāsbhāṣya) : Cittabhūmi, Cittavṛttis ; Concept of Īśvara; Yogāṅgas; Samādhi ; Kaivalya

Core Reading:

1. Bharatiya Darsana (Odia), Gouranga Charana Nayak, The Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar.

Suggested Readings:

1. History of Indian Philosophy. S.N. Dasgupta, MLBD, New Delhi.
2. Indian Philosophy, S. Radhakrishnan, George Allen and Unwin Ltd., New York.
3. A Critical Survey of Indian Philosophy, C. D.Sharma, MLBD, New Delhi.
4. Outlines of Indian Philosophy, M. Hiriyana, MLBD, New Delhi

FIRST SEMESTER

Paper- 4

SANS104

POETICS

- UNIT-I •** Dhvanyaloka:Udyota–1 Karika 1-12
- UNIT-II - •** Sahityadarpana, Chapter-II
- UNIT-III - •** Sahityadarpana, Chapter-VI
- UNIT-IV -** Selected Alankars form Sahityadarpana
Vakrokti; Anuprāsa, Yamaka, Śleṣa, Upamā, Rūpaka, Utpreṣā, Samāsokti, Apahnuti, Nīdarśanā, Arthāntaranyāsa, Dṛṣṭānta, Vibhāvanā, Viśeṣokti, Svabhāvokti, Virodhābhāsa, Saṅkara, Sansṛṣṭi

Core Reading:

- 1.Sahityadarpana of Vishvanatha with Laksmi Sanskrit Com., Sesharaja Sharma Regmi, Chowkhamba Krishnadas Academy, Varanasi, 2013. 14. Sahityadarpana (Ed.) P.V. Kane, MLBD, Delhi.
2. The Sahityadarpana, English Translation, J.R. Ballantyne and Pramada Dasa Mitra, MLBD. Delhi, 2016.
3. Sahityadarpana evam Chanda (Selected Portions), B.S. Mishra, Satyanarayan Book Store, Cuttack, 2014.
4. Dhvanyaloka of Anandavardhana, K. Krishnamurty, Motilal Banarsidass, Delhi, 1982 8. Dhvanyaloka of Anandavardhana, Sobhit Mishra, Chowkhamba Sanskrit Series Office. Varanasi, 1953.
5. Dhvanyaloka of Anandavardhana, Pt. Kulamani Mishra, Odisha Sahitya Academi, Bhubaneswar.
6. Dhvanyaloka, Lokamani Dahal, Bharatiya Vidya Prakashan, Delhi, 3rd Edition, 2014. 11. Dhvanyaloka Eka Adhyayana, Thanesh Chandra Upraiti, Samskrta Granthagar, Delhi, 2009.

FIRST SEMESTER
Paper- 5
SANS105
POETICS

UNIT-I & UNIT-II Budhacharitam (First Canto)

UNIT-III & UNIT-IV Naiṣadhīyacaritam (First Canto)

Core Readings: (UNIT-I & UNIT-II)

1. Buddhacharitam, Chaukhamba Vidyabhavan, Varanasi 1988 AD, First Part
2. History of Sanskrit Literature, Acharya Baldev Upadhyay
3. Buddhacharitam, Chaukhamba Sanskrit Series, Varanasi
4. History of Sanskrit Literature, Dr. Umashankar Sharma 'Rishi'
5. Critical History of Sanskrit Literature - Dr. Kapildev Dwivedi

Suggested Readings:

1. Buddhacharitam, Chaukhamba Sanskrit Series, Varanasi
2. History of Sanskrit literature
3. Buddhacharitam, Mahakabi Ashvaghosha

Core Readings: (UNIT-III & UNIT-IV)

1. History of Sanskrit Literature - Acharya Baldev Upadhyay, Sharda Niketan, Varanasi.
2. Modern History of Sanskrit Literature- Dr. Radhavallabh Tripathi, University Publications, Varanasi.
3. Outline of Sanskrit literature
4. Critical History of Sanskrit Literature - Dr. Kapildev Dwivedi
5. History of Sanskrit Literature - Dr. Umashankar Sharma 'Rishi'

Suggested Readings:

1. Sahitya Darpan - Acharya Vishwa Nath
2. Dasharupaka - Acharya Dhananjay
3. Naishadhyacharitam- great poet Shriharsh
4. Naishadhyacharitam- Mahakavi Shriharsh, Kshemraj Shri Krishnadas, Venkateshwar Prakashan

SECOND SEMSTER
Paper- 6
SANS206
Ancillary Vedic Literature

UNIT-I • Ṛkprātiśākhyā : Definitions of Samānākṣara ; Sandhyakṣara; Aghoṣa; Soṣman; Svarabhakti ; Yama ; Rakta; Saṁyoga; Pragṛhya ; Riphita

UNIT-II Nirukta (Chapters-I)

UNIT-III & UNIT-IV - Principles of Etymology

Etymology of the following words:

Āchārya; Vīra; Hrada; Go; Samudra; Vṛtra; Āditya; Uṣas; Megha; Vāk; Udak; Nadī; Aśva; Agni; Jātavedas; Vaiśvānara; Nighaṅtu Vedic Accent- Udātta, Anudātta and Svarita

Core Readings:

1. New Vedic Selection (Part-I) (Ed.) Telang and Chaubey, Bharatiya Vidya Prakashan, New Delhi
2. Vaidika Sahitya aur Samskriti, Baladeva Upadhyaya, Chaukhamba, Varanasi

Suggested Readings:

1. Vaidika sahitya o Samskriti, A.C. Das, Grantha Mandira, Cuttack
2. Veda O Vaidika Prakarana (Ed) Pustak mandir, Berhampur.
3. History of Indian Literature Vol. I, M. Wintermitz, MLBD, New Delhi
4. Vaidik sahitya ki Ruparekha, Umashankar Sharma Rai, Chaukhamba Vidyaprakashan, Varanasi
5. Vaidika Sahitya O Samskriti, Bholanath Rout, Chitrotpala Publication, Salipur

SECOND SEMSTER

Paper- 7

SANS207

Grammar

- UNIT-I Abyibhabasamasah & Tatpurasamasah (Laghusidhantakaumudi)
- UNIT-II Bahubrisamasah (Laghusidhantakaumudi)
- UNIT-III Dawndasamasah (Laghusidhantakaumudi)
- UNIT-IV Streepratayah (Laghusidhantakaumudi)

Suggested Readings:

1. Siddhanta-kaumudi Banarsidass, Delhi
2. Siddhanta-kaumudi - Eng, S.C. Vasu, Motilal Banarsidass, New Delhi
3. Siddhanta-kaumudi-(Ed) S. R. Ray, Sanskrit Pustak Bhandar, Kolkata
4. Siddhanta-kaumudi - (Ed) Karaka - Bishnupada Bhattacharya
5. Siddhanta-kaumudi - (Ed) M.V. Mahashabde, Dadar Book Depot, Dadar, Bombay.
6. Siddhanta-kaumudi - (Ed) G.K. Dash & K. Dash, A.K. Mishra Agencies, Cuttack
7. Siddhanta Kaumudi (Samjna, Paribhasa and Karaka Prakarana) (Ed.) Minati Mishra, Vidyapuri. Cuttack
8. Siddhanta-kaumudi - (Ed) Samasa - Madhubala Sharma & J. Shastri, MLBD, Delhi
9. Siddhanta-kaumudi (Part I & II), Gopal Datta Pandey, Chowkhamba Surabharati Prakashan, Varanasi, 4th Edition, 1996.
10. Siddhanta-kaumudi (Part I & II), Govindacharya, Chowkhamba Publications, Varanasi.

SECOND SEMSTER

Paper- 8

SANS208

Grammar & Philology

- UNIT-I & UNIT-II Phonetics, Phonology, Semantics, Syntax and Morphology. Chief Characteristics and Classification of Indo- European language.
- UNIT-III & UNIT-IV - Indo- European Origin of Sanskrit, Veda and Avesta, Vedic and Classical Sanskrit, Pali, Prakrit and Apabhramsa

SECOND SEMSTER

Paper- 9

SANS209

SANSKRIT PLAYS

UNIT-I & UNIT-II Mṛcchakatīkam
UNIT-III & UNIT-IV Uttaramacaritam

Suggested Readings:

1. Mṛcchakatīkam, (Ed.) M.R. Kale, Booksellers and Publishers Co, Bombay, 1952.
2. Mṛcchakatīkam with the comm. of Pruthvidhara, Nirnaya Sagar Press, Bombay.
3. Uttara-Ram-Charita of Bhavabhuti. Critically edited with notes and an English translation by Shripad Krishna Belvalkar. Harvard University Press 1915
4. Uttara-rama-charitam of Bhavabhuti (Ed.) by P.V. Kane. of Bhavabhuti (Ed.) by M.R. Kale
5. Uttara-rama-caritam 6. Uttara-rama-caritam of Bhavabhuti (Ed.) by G.K. Bhatt

SECOND SEMSTER

Paper-10

SANS210

POTICS

UNIT-I & UNIT-II • Kāvya-prakāśa –
Kāvya-lakṣṇa, Kāvya-prayojana, Kāvya-hetu, Kāvya-bheda, Śabdaśakti,
Abhihitānvayavāda, Anvitābhidhānvayavāda, concept of Rasa, discussion
of Rasasūtra, Rasadoṣa, Kāvya-guṇa, Vyanjanāvriti (Fifth Chapter)
UNIT-III Schools of Sanskrit Poetics – Rasa, Alankāra, Rīti, Dhvani, Vakrokti, Aucitya.
UNIT-IV Natyashastra, Chp.-I

Suggested Readings:

1. Kavya-prakasha, With Sahitya-cudamani and Sudhasagara Commentary, Rewaprasada Dwivedi, Benaras Hindu University, Varanasi, 1st Edition, 1981.
2. Kavya-prakasha, With the Commentary Pradipa, Udyota and Prabha, Biswanath Bhattacharya and Jay Sankar Lal Tripathi, Benaras Hindu University, Varanasi, 1
3. Kavya-prakasha, with Sanskrit. Comm., V. Jhalakikar, BORI, Pune, 1950. Edition, 2003.
4. Kavya-prakasa (English Translation), M.M. Dr. Ganganath Jha, Bharatiya Vidya Prakashan, Delhi, 2005.

THIRD SEMSTER

Paper-11

SANS311

CONTRIBUTION OF ODISHA TO SANSKRIT LITERATURE

UNIT-I – Gitagovindam, canto(1-4)
UNIT-2- Sahrudayanandam, 1st canto
UNIT-III - Biswanath Kaibiraj, Jayadev, Haladhara Mishra,
UNIT 4- Jivadevacharya, Raya Divakara, Krishna nanda

Suggested Readings:

1. Gitagovindam (Ed.) Bhagaban Panda, Dept. of Culture, Govt. of Orissa.
2. Gitagovindam Surabharati Prakashan, Varanasi, 2012. Sivaprasada Dwivedi, Chowkhamba
3. Gitagovindam with Rasikapriya,
4. Sri Gitagovindam, Prof. Vidya Niwas Mishra, Sampurnananda Sanskrit University, Varanasi, 2005.

THIRD SEMSTER

Paper-12

SANS312

**DTP in Sanskrit & Proof reading
(Practical paper)**

THIRD SEMSTER
Paper-13
SANS313
Research Methodology

UNIT-I - Research Methodology Definition, Characteristics of research
UNIT-II -Types and scope of research
UNIT-III -Design of research paper and dissertation including Reference, foot notes and bibliography
UNIT-IV – scope of research in Sanskrit language language & literature

1. Rapid Sanskrit Speaking Course, Amrutavani Seva Pratisthana, Balasore. 3. Vyavaharasahasri, Samskrta Bharati, Bangalore.
2. Vyakarana Darpana, Text Book Bureau, Odisha.
3. M. I.A. Style sheet, American Studies Research Centre, Hyderabad-7
4. Elements of Research Methodology by Keshab Chandra Dash, Chowkhamba Sansk Sansthan, Varanasi
5. Methodology in Indological Research, Sriman Narayan Murty, Bharatiya Vidya Prkashan, Delhi
6. Gavesana Pravidhi(Oriya) - By S. Chatterjee, Vidyapuri, Cuttack-2
7. Rgveda me vividha vidyaen, Dr. Surendra Kumar, Sanjay Prakashan, Delhi.2010
8. Vaidika Sahitya aur Samskrti (in Hindi), Baladev Upadhyay, Chowkhamba Publication, Varanasi

THIRD SEMSTER
Paper-14
SANS314
ELECTIVE-A (Grammar)

UNIT-I, UNIT-II, UNIT-III & UNIT-IV- Paspasanhikam of Mahabhasya

THIRD SEMSTER
Paper-15
SANS315
ELECTIVE-A (Grammar)

UNIT-I – Abyani (Lagusidhantakaumudi)
UNIT-II - Krudante krutyapratayah (Lagusidhantakaumudi)
UNIT-III – Purbakrudantah (Lagusidhantakaumudi)
UNIT-IV- Utarakrudatnh (Lagusidhantakaumudi)

Suggested Readings:

1. Lagusidhantakaumudi Banarsidass, Delhi
2. Lagusidhantakaumudi - Eng, S.C. Vasu, Motilal Banarsidass, New Delhi
3. Lagusidhantakaumudi -(Ed) S. R. Ray, Sanskrit Pustak Bhandar, Kolkata
4. Lagusidhantakaumudi - (Ed) Karaka - Bishnupada Bhattacharya
5. Lagusidhantakaumudi - (Ed) M.V. Mahashabde, Dadar Book Depot, Dadar, Bombay.
6. Lagusidhantakaumudi - (Ed) G.K. Dash & K. Dash, A.K. Mishra Agencies, Cuttack
7. Lagusidhantakaumudi (Samjna, Paribhasa and Karaka Prakarana) (Ed.) Minati Mishra, Vidyapuri. Cuttack
8. Lagusidhantakaumudi - (Ed) Samasa - Madhubala Sharma & J. Shastri, MLBD, Delhi
9. Lagusidhantakaumudi (Part I & II), Gopal Datta Pandey, Chowkhamba Surabharati Prakashan, Varanasi, 4th Edition, 1996.
10. Lagusidhantakaumudi (Part I & II), Govindacharya, Chowkhamba Publications, Varanasi.

THIRD SEMSTER
Paper-16
SANS316
ELECTIVE-B (Sahitya)

UNIT-I & UNIT-II – selected chanda from chandomanjari - Āryā, Anuṣṭup, Indravajrā, Upendravajrā, Vasantatilakā, Upajāti, Vamśastha, Drutavilambita, Śālinī, Mālinī, Śikharnī, Mandākrāntā, Hariṇī, Śārdūlavikrīḍita, Sragdharā

UNIT-III & UNIT-IV- Kavyaprakash – chp-01

Suggested Readings:

1. Kavyaprakasha, With Sahityacadamani and Sudhasagara Commentary, Rewaprasada Dwivedi, Benaras Hindu University, Varanasi, It Edition, 1981.
2. Kavyaprakasha, With the Commentary Pradipa, Udyota and Prabha, Biswanath Bhattacharya and Jay Sankar Lal Tripathi, Benaras Hindu University, Varanasi, 1
3. Kavyaprakasha, with Sanskrit. Comm., V. Jhalakikar, BORI, Pune, 1950. Edition, 2003.
4. Kavyaprakasa (English Translation), M.M. Dr. Ganganath Jha, Bharatiya Vidya Prakashan, Delhi, 2005.

THIRD SEMSTER
Paper-17
SANS317
ELECTIVE-B (Sahitya)

UNIT-I & UNIT-II – Kavyaprakash – chp-02

UNIT-III & UNIT-IV – Dhvanyaloka chp-02

Suggested Readings:

1. Kavyaprakasha, With Sahityacadamani and Sudhasagara Commentary, Rewaprasada Dwivedi, Benaras Hindu University, Varanasi, It Edition, 1981.
2. Kavyaprakasha, With the Commentary Pradipa, Udyota and Prabha, Biswanath Bhattacharya and Jay Sankar Lal Tripathi, Benaras Hindu University, Varanasi, 1
3. Kavyaprakasha, with Sanskrit. Comm., V. Jhalakikar, BORI, Pune, 1950. Edition, 2003.
4. Kavyaprakasa (English Translation), M.M. Dr. Ganganath Jha, Bharatiya Vidya Prakashan, Delhi, 2005.

THIRD SEMSTER
Paper-18
SANS318
ELECTIVE -C (VEDA)

UNIT 1.ISAVASYOPANISAD

UNIT 2. KENOPANISAD

UNIT3. HYMNS FROM ATHARVAVEDA

VARUNA(4.16), RASTRASABHA, 6.12, MEDHAJANANA,1.1

UNIT4. PRITHVI, 13.(1-20), KALA,19.53, VISWAMITRA NADI SAMVADA OF RIG VEDA

Core Readings:

1. New Vedic Selection (Part-I) (Ed.) Telang and Chaubey, Bharatiya Vidya Prakashan, New Delhi
2. Vaidika Sahitya aur Samskrti, Baladeva Upadhyaya, Chaukhamba, Varanasi

Suggested Readings:

- 1.Vaidika sahitya o Samskrti, A.C. Das, Grantha Mandira, Cuttack
2. Veda O Vaidika Prakarana (Ed) Pustak mandir, Berhampur.
3. History of Indian Literature Vol. I, M.Wintermitz, MLBD, New Delhi
- 4.Vaidik sahitya ki Ruparekha, Umashankar Sharma Rai, Chawkhamba Vidyaprakashan, Varanasi
5. Vaidika Sahitya O Samskrti, Bholanath Rout, Chitrotpala Publication, Salipur

THIRD SEMSTER
Paper-19
SANS319
ELECTIVE -C (VEDA)

UNIT 1. AITAAREYA BRAHMANA, SUNASEPHA-UPAKHYANA
UNIT 2. NIRUKTA, PADA, 1-3, OF FST ADHYAYA
UNIT 3. OUTLINES OF BRAHMANA, ARANYAKA, UPANISAD
UNIT 4. THE CELESTIAL VEDIC GODS IN GENERAL

Core Readings:

1. New Vedic Selection (Part-I) (Ed.) Telang and Chaubey, Bharatiya Vidya Prakashan, New Delhi
2. Vaidika Sahitya aur Samskrti, Baladeva Upadhyaya, Chaukhamba, Varanasi

Suggested Readings:

1. Vaidika sahitya o Samskrti, A.C. Das, Grantha Mandira, Cuttack
2. Veda O Vaidika Prakarana (Ed) Pustak mandir, Berhampur.
3. History of Indian Literature Vol. I, M. Winternitz, MLBD, New Delhi
4. Vaidik sahitya ki Ruparekha, Umashankar Sharma Rai, Chaukhamba Vidyaprakashan, Varanasi
5. Vaidika Sahitya O Samskrti, Bholanath Rout, Chitrotpala Publication, Salipur

THIRD SEMSTER
Paper-20
SANS320
ELECTIVE -D (DARSAN)

UNIT 1. BHAJAGOVINDAM
UNIT 2. BHAGAVADGITA, 15TH CHAPTER
UNIT 3. SADADARSANAPARICAYA (IN GENERAL)
UNIT 4. VAKYAPADIYAM, 1.(1-30)

THIRD SEMSTER
Paper-21
SANS321
ELECTIVE -D (DARSAN)

UNIT 1. & 2. BHAGABADGITA, 2ND CHAPTER
UNIT 3. YOGASUTRA OF PATANJALI, SAMADHIPADA, 1-24
UNIT 4. VAKYAPADIYAM, 1. (31-60)

FOURTH SEMSTER
Paper-22
SANS322
VASTUVIDYA

UNIT-I - Bhubicharah
UNIT-II – Bhabananirmanasya samayanirupanam
UNIT-III -Bhabananirmana
UNIT-IV- Bhabanabinyasa

FOURTH SEMSTER
Paper-23
SANS323
SCIENTIFIC LITERATURE IN SANSKRIT

UNIT-I – Chemistry in sanskrit
UNIT-II – Physics in sanskrit
UNIT-III -Botany in sanskrit

UNIT-IV- Agricultural science in sanskrit

FOURTH SEMSTER
Paper-24
SANS424
DISSERATION

FOURTH SEMSTER
Paper-25
SANS425
(OPTIONAL)
ETHICS IN SANSKRIT LITERATURE

UNIT-I – Nitisatakam –shloka 1-15
UNIT-II – Bairagyasatakam – shloka-1-15
UNIT-III –Biduraniti – shloka- 1-15
UNIT-IV- Sukraniti- shloka-1-15

FOURTH SEMSTER
Paper-26
SANS426
(OPTIONAL)
Outline of Culture & Civilization in Sanskrit Literature

UNIT-I – 16Samksaras.
UNIT-II – Types of marriage
UNIT-III – Varnasrama Vyavastha
UNIT-IV- Vaidik kaliaan sikhya pranalih

FOURTH SEMSTER
Paper-27
SANS427
(OPTIONAL)
PURANIC LITERATURE

UNIT-I – Rāmāyaṇa – Subject matter, age, society in the Rāmāyaṇa, Rāmāyaṇa as a source of later Sanskrit works and literal value of the Rāmāyaṇa, legends in the Rāmāyaṇa
UNIT-II – Mahābhārata – Subject matter, age, society in the Mahābhārata, Mahābhārata as a source of later Sanskrit works and literal value of the Mahābhārata, legends in the Mahābhārata
UNIT-III & UNIT-IV- Purana-laksana and Classification of Puranas

FOURTH SEMSTER
Paper-28
SANS428

(OPTIONAL)
Yoga for Personality Development and Stress Management

UNIT-I – Concept of Yoga- meaning and Definition, Types and Techniques of Yoga

UNIT-II – Personality Development through Yoga, Yogic Techniques to develop Attention, Memory and Concentration

UNIT-III - Concept of Stress according to Indian prospective and its Impact.

UNIT-IV- Stress management through Yogic Techniques- Pranayama, Dhyana, Chanting of Mantra etc.

THANK YOU

COURSES OF STUDY

Master of Commerce (M.Com)

Under Choice Based Credit System (CBCS)

(Effective from the Admission Batch 2023-2024)



**P.G. Department of Commerce
Berhampur University
Bhanja Bihar-760007**

Course Curriculum & Syllabi for Master of Commerce (M.Com)

(Effective from Admission Batch 2023-24)

P.G. Department of Commerce

Berhampur University, Bhanja Bihar-760007

About the Department:

The Post Graduate Department of Commerce is one of the oldest Departments in Odisha and India as well offering Commerce and business education. It was established in 1976 and has been immensely contributing for the development of commerce and business education by offering two year Master's Degree programme (M.Com), one year Master of Philosophy programme (M.Phil.) and Doctoral programme (Ph.D.) in Commerce. In addition, the department is also offering a two year professional programme in finance i.e. MBA (Financial Management) under self-financing mode. The Department has been imparting value based quality education and actively engaged in research as per the industry and market requirements by using ICT enabled facility, case based teaching, game playing, classroom presentation, weekly seminar, Computer lab assignments and project preparation. The department is well equipped with infrastructural facility such as Classrooms, Seminar Hall, Faculty Chambers, Computer lab, Office Room, Scholars' Room, Department Library, Reference Room, Students Activity Room, Badminton Court, Garden etc.

Programme Objectives:

With a quest to achieve excellence “in shaping the young minds, making them employable and socially responsible human being by inculcating befitting set of knowledge for a better future”, the P.G. Department of Commerce, directs all its efforts towards creating an ecosystem where innovative thoughts, open-mindedness, motivated self-drive take natural germination. The M.Com programme aims to provide:

- Conducive environments where the students can self discover their true potential for growth.
- Research orientation.
- Entrepreneurial skill and traits.
- Necessary knowledge and capacity to nurture future academicians.

As per this course structure, the M.Com programme comprises of 4 semesters with five courses in each semester. Further, as per the interest, the students have to choose one elective group out of three elective groups. The elective groups have been designed to offer advanced level specialization to the student in their respective fields. Under choice based credit System, the student will also study open elective course from other departments of the University.

P.G. Department of Commerce, Berhampur University

To enhance the employability of the students, the department also offers one non-credit Value Added Course in 2nd Semester and one non-credit Value Added Course in 3rd semester which is not binding on the students to pursue. In addition, to create awareness among the students regarding the cultural heritage of South Odisha one non-credit is also offered by the University in 4th semester which is also not binding on the students to pursue.

The M.Com programme structure designed to delve deeper understanding of various dimensions of business, commerce and management. The syllabus aims at developing academic knowledge and skill, managerial ability and innovativeness among the students.

Programme Outcomes:

The course curriculum has been designed and continuously updated by considering the current academic standards and industry requirements at the State, National as well as International level, which equips the students to perform best in industry, teaching and research. The Master of Commerce (M.Com) course provides an excellent platform for teaching and research in business sphere. The course redefines and enhances the students' competency in analysing various functional areas of business such as finance, production, marketing, human resource and accounting. The course helps the students in understanding the different dimensions of business environment and take strategic decisions on various business operations by following ethical values. It serves the need of academics by inculcating the teaching and research orientation. The course helps the students in concreting the foundation for their higher studies and establishing themselves in the State and National level competitive examinations as well as making them employable in the field of accounting, finance and marketing. The teaching pedagogy is adopted to ensure all-round learning for the students. This course aligns with the University's overall vision i.e., taking up the social responsibility towards the holistic development of the weaker sections in the region by providing quality education. This course also attempts to kindle the sense of responsibility, development of innovative entrepreneurial ability with commitment to human values and ethics among the students.

To get industry exposure and get insights from industry, the students are required to undergo Industrial Visit/ Industrial Tour/Study Tour/ Field Study in 3rd/4th semester of the programme.

Choice of Elective: For both 3rd and 4th semester, a student is allowed to opt for three core elective papers of any one of the groups from “Accounting & Finance”, “Banking & Institutional Finance” and “Marketing”.

Evaluation: Each credit course carries 100 marks comprising of 20 marks of Mid-Semester assessment and 80 mark of End-Semester assessment except paper COMM C301 (Internship Project & Presentation) which carriage 50 marks for internship project and 50 marks for presentation of the internship project and COMM C402 (Dissertation and Viva-voce) which carries 50 marks for dissertation and 50 marks for performance in the viva-voce.

Semester Wise Details of M.Com Programme			
Paper Code	Core/Elective	Paper Title	Credit
Semester-I			
COMM C101	Core	Organisational Behaviour	4
COMM C102	Core	International Business Environment	4
COMM C103	Core	Advanced Marketing Management	4
COMM C104	Core	Advanced Financial Management	4
COMM C105	Core	Business Data Analytics	4
Semester-II			
COMM C201	Core	Macro Economics	4
COMM C202	Core	Advanced Cost & Management Accounting	4
COMM C203	Core	Fundamentals of Fin-Tech	4
COMM C204	Core	Strategic Financial Management	4
COMM C205	Core	Research Methodology and Report Writing	4
COMM VAC1	Value Added Course (Non-Credit)	Start-Ups & Entrepreneurship	--
Semester-III			
COMM CT300	CBCT	Personal Financial Planning	4
COMM C301	Core	Internship Project & Presentation	4
COMM E302	Elective (Accounting & Finance)	Advanced Accounting	4
COMM E303	Elective (Accounting & Finance)	Investment Analysis & Portfolio Management	4
COMM E304	Elective (Accounting & Finance)	Financial Derivatives and Risk Management	4
COMM E305	Elective (Banking & Institutional Finance)	Behavioural Finance	4
COMM E306	Elective (Banking & Institutional Finance)	Management of Financial Institutions	4
COMM E307	Elective (Banking & Institutional Finance)	Financial Services and Marketing	4
COMM E308	Elective (Marketing)	International Marketing	4
COMM E309	Elective (Marketing)	Supply Chain Management and Logistics	4
COMM E310	Elective (Marketing)	Consumer Behaviour	4
COMM VAC2	Value Added Course (Non-Credit)	Trading in Stock Market	--
Semester IV			
COMM C401	Core	Strategic Management & Corporate Governance	4
COMM C402	Core	Dissertation and Viva-voce	4
COMM E403	Elective (Accounting & Finance)	IFRS and Ind AS	4
COMM E404	Elective (Accounting & Finance)	International Accounting & Corporate Reporting	4
COMM E405	Elective (Accounting & Finance)	International Finance	4
COMM E406	Elective (Banking & Institutional Finance)	Treasury, Investment and Risk Management	4
COMM E407	Elective (Banking & Institutional Finance)	International Banking	4
COMM E408	Elective (Banking & Institutional Finance)	Insurance Management	4
COMM E409	Elective (Marketing)	Digital Marketing	4
COMM E410	Elective (Marketing)	Retail Marketing Management	4
COMM E411	Elective (Marketing)	Customer Relationship Management	4
COMM AC1	Add on Course (Non-Credit)	Cultural Heritage of South Odisha	--
Total Credit			80

Prerequisite: Basic knowledge of general management.

Course Objectives: To develop theoretical and practical understanding of different components of individual and group behaviour in organizational setting.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the concepts of organisational behaviour.

CO2: Know the various dimensions of individual behaviour and motivation.

CO3: Learn about group dynamics, team spirit and organisational conflict.

CO4: Have a better Insight about leadership and organisation structure.

Pedagogy: Lectures, Case study Analysis, Experiential exercises and Assignments.

Unit-I:

Introduction: Emergence of Organisational Behaviour; Management and OB; Hawthorne Studies and Human Relations School; Challenges and Opportunities for Organisational Behaviour; Positive Organisational Behaviour.

Unit-II:

Individual Behaviour: Foundations of Individual Behaviour; Perception; Attribution; Personality; Attitude; Learning and Values; Motivation, Theoretical and Practical Dimension.

Unit-III:

Group Behaviour: Group Dynamics; Cohesiveness and Productivity; Group Decision Making; Managing Organisational Conflict; Managing Misbehaviour at Work.

Unit-IV:

Leadership: Influence, Power and Politics; Leadership – Theoretical and Practical Dimension.

Organization System & Processes: Organization Structure – Foundation and Types; Climate and Ethos; Communication; Organizational Effectiveness & Performance, Managing Change.

Readings:

1. Greenberg, Baron. Behaviour in Organisations: Understanding and Managing the Human Side of work. Pearson.
2. Hassard, J. Rethinking the Hawthorne Studies: The Western Electric research in its social, political and historical context. Human Relations 65(11):1431–1461.
3. Hegar, Kathryn W. (2011). Modern Human Relations at work, International Edition. Cengage.
4. Hersey, Paul, Dewey E. Johnson, and Kenneth, H. Blanchard. Management of Organisational Behaviour, PHI.

COMM C102 INTERNATIONAL BUSINESS ENVIRONMENT

Prerequisites: Basic knowledge of international business and its operations.

Course Objectives: To develop the ability to understand and scan international business environment, analyze opportunities and take decisions under uncertainty.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the international business environment.

CO2: Analyze the interaction of economic, political, legal environment.

CO3: Scan the business environment on international level & can take various business decisions.

CO4: Understand foreign investment and its mechanism.

Pedagogy: Lectures, Case Study Analysis, and Assignments.

Unit – I:

International Business Environment: Need, Importance and Scope of International Business Environment- Frame Work for Analysing International Business Environment- Economic, Technological, Socio-Cultural, Political and Legal Environment-Strategic Management-Meaning, Phases-Environmental Analysis (SWOT Analysis, PESTLE Analysis in Detail)-Challenges.

Unit – II:

International Economic Environment: World Economic and Trading Situation; International Financial System; International Economic Institutions and Agreements – WTO, UNCAD, IMF, World Bank, UNO; Generalized System of Preferences, GSTP; International Commodity Agreements.

Regional Economic Co-operation and Integration between Countries; Different Levels of Integration between Countries; European Union, NAFTA, ASEAN, EFTA, SAARC, SAPTA, The ANDEAN Community, MERCOSUR.

Unit – III:

International Business: Nature, Importance and Scope – Approaches to International Business, Stages of Internationalisation of Business, Mode of Entry into International Business. Multinational Corporations: Conceptual Framework of MNCs; MNCs and Host and Home Country Relations; International Technology Transfers – Importance and Types – M&A of MNCs, Foreign Technology Acquisition.

Unit – IV:

Foreign Investment: Capital Flows – Types and Theories of Foreign Investment; Foreign Investment Flows and Barriers- Foreign Direct Investment (FDI), Foreign Exchange Market, Structure, Participants, Concept of Forex Derivatives: Futures, Forwards, Options and Swaps etc.

Readings:

1. Cherunilam F., Business Environment: Texts and Cases (Himalaya).
2. Aswathappa K., Essentials of Business Environment (Himalaya).
3. Agrawal and Diwan, Business Environment (Excel).
4. Mishra &Puri, Economic Environment of Business (Himalaya).
5. Jain P.C., Government and Business Policy (Galgotia).
6. Ghosh B., Economic Environment of Business (Vikas).
7. Adhikary M., Economic Environment of Business (Sultan Chand).
8. F.Churunilam, International Business Environment (Himalaya).

Prerequisites: Basic knowledge of marketing management.

Course Objectives: To familiarize the students with the basic concepts of marketing and to develop their analytical skills so as to enable them to manage marketing operations of a business firm.

Course Outcomes: After completion of this course the students will be able to:

CO1: Familiarize themselves with the fundamentals of marketing and take better marketing decisions.

CO2: Understand the nuances and complexities involved in various products and pricing decisions.

CO3: Take effective distribution decisions for products and services.

CO4: Know the recent trend in marketing and ethical issues involved in marketing.

Pedagogy: Lectures, Case Study Analysis, Experiential exercises and Assignments.

Unit-I:

Introduction: Evolution of Marketing, Concepts of Marketing, Marketing Mix, Strategic Marketing Planning and Overview.

Market Analysis and Selection: Marketing Environment, Macro and Micro Components and Their Impact on Marketing Decision, Market Segmentation and Positioning.

Unit-II:

Product and Pricing Decision: Product- Concept and Classification, Layers of Product, Major Product Decisions; Product-Mix; New Product Development Stages; Packaging and Labelling; Product Life Cycle (PLC) – Concept and Appropriate Strategies Adopted at Different Stages.

Pricing: Objectives, Price Sensitivity, Factors Affecting Price of a Product, Pricing Methods and Strategies, Ethical Issues in Product and Pricing Decisions.

Unit-III:

Promotion and Distribution Decisions: Promotion Mix-Advertising, Personal Selling, Sales Promotion, Publicity and Public Relations, Nature, Function and Types of Distribution Channels, Distribution Channel Intermediaries, Channel Management Decision.

Unit-IV:

Trends in Marketing: Service Marketing, E-Marketing, Green Marketing, Customer Relationship Management, Rural Marketing; Digital Marketing; Other Emerging Trends: Ethical Issues in Marketing.

Readings:

1. Etzel, M. J., Walker, B. J., Staton, W. J., & Pandit, A. *Marketing Concepts and Cases*. Tata McGraw Hill.
2. Kotler, P. & Keller, K. L. *Marketing Management*. Pearson.
3. Kotler, Philip: *Marketing Management: Analysis, Planning Implementation and Control*, (Prentice Hall).
4. Kotler, Philip, and Gary Armstrong: *Principles of Marketing*, (Prentice Hall).
5. McCarthy, E. J., Cannon, J. & Perreault, W. *Basic Marketing*. McGraw-Hill Education.

Prerequisites: Knowledge of corporate financial accounting and mathematics.

Course Objectives: To make students understand various issues involved in financial management of a company and equip them with advanced analytical tools and techniques which can enhance their analytical ability for making sound financial policy decisions in a company.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the foundations of financial management and role of a finance manager.

CO2: Evaluate capital projects under different situations using appropriate capital budgeting techniques.

CO3: Determine cost of capital and examine the capital structure decisions.

CO4: Understand various issues and theories of dividend policy and management of working capital.

Pedagogy: Lectures, Case Study Analysis, Computer Application and Assignments.

Unit-I:

Introduction: Meaning, Nature, Scope and Principles of Financial Management. Objectives of Financial Management- Profit vs. Wealth Maximization, Measurement of Shareholders' Wealth- EVA and MVA, Role of a Finance Manager, Types of Financial Decisions, Agency Problem and Agency Costs.

Unit-II:

Capital Budgeting Decision: Concept and Estimation of Discounted Cash Flow (DCF), Capital Budgeting Techniques- Payback Period, Discounted Payback Period, Net Present Value, Accounting Rate of Return, Internal Rate of Return, Modified Internal Rate of Return, Profitability Index.

Unit-III:

Cost of Capital and Capital Structure Decision: Specific Costs of Capital, Weighted Average Cost of Capital: Theories of Capital Structure- Net Income Theory, Net Operating Income Theory, Traditional Theory, MM Hypothesis, Trade-Off Theory, Pecking Order Theory, Market Timing Theory, Signalling Theory and Effect of Information Asymmetry on Capital Structure, Factors Affecting Choice of Capital Structure.

Leverage: Financial Leverage and Operating Leverage.

Unit-IV:

Dividend Decision: Issues in Dividend Decision, Theories of Relevance and Irrelevance of Dividend in Firm Valuation-Pure Residual Theory, Walter's Model, Gordon's Model, MM Hypothesis, and Dividend Signalling Theory, Relevance of Dividend under Market Imperfections, Traditional and Radical Position on Dividend, Types of Dividend Policies, Lintner's Model of Corporate Dividend Behaviour.

Working Capital Management: Concept and Types of Working Capital, Cash Cycle and Management of Cash Holdings.

Readings:

1. Brealey, R. A. and Myers S. C. *Principles of Corporate Finance*. McGraw Hill.
2. Chandra, P. *Financial Management-Theory and Practice*. Tata McGraw Hill.
3. *Corporate Finance*. Cengage Learning.
4. Damodaran, A. *Corporate Finance: Theory and Practice*. John Wiley & Sons.
5. Pandey, I. M. *Financial Management*. Vikas Publishing.
6. Ross, S. A. and Westerfield, R. W. *Corporate Finance*. McGraw Hill.
7. Keown, A. J., Martin, J. D., Petty, J. W., and Scott, D. F. *Financial Management*. Pearson Prentice Hall

Prerequisites: Basics of central tendency, dispersion, correlation, variables and computer skills.

Course Objectives: To equip students with the important data analysis techniques for managerial decision making and to provide ground for learning advanced analytical tools used in research.

Course Outcomes: After completion of this course the students will be able to:

CO1: Become aware of the concepts of data analytics, its various application in business decision.

CO2: Understand the concept of data, its structure and technique of data collection.

CO3: Understand the data visualisation techniques and application correlation & regression analysis

CO4: Expose to various hypothesis testing technique and machine learning tools. and visualisation tools.

Pedagogy: Lectures, Case study Analysis, Computer Application, and Assignments

Unit-I:

Introduction to Business Data Analytics: Changing Face of Business Statistics: Business Analytics, Big Data, Role of Software in Statistics, Data Analysis vs. Data Analytics, Business Data Analytics (BDA) and Its Evolution, Importance of BDA, Application of Data Analytics in Business, Classification of BDA: Descriptive Analytics, Predictive Analytics and Prescriptive Analytics, Framework of BDA, Step-Wise Process of BDA, Scope of BDA.

Unit-II:

Data for Business Analytics: Defining Data: Categorical vs. Numerical, Properties of Good Data: Reliability & Validity, Data Structure: Structured, Semi Structured & Unstructured, Data Arrangement: Time Series, Cross Sectional & Panel Data, Data Measurement: Nominal, Ordinal, Interval & Ratio Scale, Data Collection: Population vs. Sample; Sampling: Need, Errors and Methods of Sampling, Law of Large Numbers and Central Limit Theorem, Data Sources: Primary vs. Secondary, Data Cleaning Process.

Unit-III:

Data Visualisation and Regression Analysis: Data Visualisation: Visualising Categorical & Numerical Data, Visualisation Using Computer Application (Excel & Tableau). Partial & Multiple Correlation, Multiple Regression: Ordinary Least Square (OLS) Method, Assumptions of OLS Regression and Its Diagnostics Test Using Computer Software, Overview of Time Series & Panel Regression and Its Assumptions, Theoretical Foundation on Univariate Time Series Model and Panel Fixed Effect & Random Effect Models, Testing Regression Models Using Computer.

Unit-IV:

Theory of Estimation and Testing of Hypotheses: Hypothesis Testing & Its Importance in Analytics, Development of Null and Alternative Hypothesis, Errors in Hypothesis Testing, Significance Test of Large Sample and Small Sample Test ; T-Test, Z- Test and F- Test, Non Parametric Test:- Chi-Square Test, Sign Test, Rank Sum Test, One Sample Runs Test, H Or Kruskal Walls Test. Practical Application of Hypothesis Testing by Using Computer Software, Overview of Various Data Analytics Software: MS Excel, Python, R, Gretl, SPSS, STATA, E-Views.

Readings:

1. Business Analytics for Managers: Taking Business Intelligence Beyond Reporting, Wiley.
2. Business Analytics: Data Analysis and Decision making, Cengage
3. Swayam-NPTEL Course: Business Analytics for Management Decision, offered by IIT kharagpur
4. Introduction to Statistics –an intuitive guide for analyzing data and unlocking discoveries, Jim Frost

Semester-II

COMM C201

MACRO ECONOMICS

Prerequisite: Basic knowledge of economics.

Course Objectives: The objective of this course is to acquaint students to the specialized concepts of Macroeconomics. This course discusses the concepts associated with the National Income Accounting, monetary policy, fiscal policy and various issues in economic development.

Course Outcomes:

CO1: To develop an understanding of the concept of Macro Economics

CO2: To acquire a fair degree of proficiency in National Income accounting

CO3: To have better idea about money, credit creation and monetary policy

CO4: To know the components of Fiscal Policy and issues in Economic Development.

Pedagogy: Lectures, Case study Analysis, Experiential exercises and Assignments.

Unit- I:

Introduction to Macro Economics: Introduction, Micro vs. Macro Economics, Importance of Macro Economics, Overview of Economics Systems: Mixed Economy, Socialism Economy, Capitalism Economy and Islamic Economy.

Unit – II:

National Income Accounting: Meaning, Concepts & Variants of GDP, Three Methods of Calculating the National Income, Methods of GDP Accounting, Government & Private Sector Savings, Price Index, GDP Deflator, Concept of Circular Flow of Income.

Unit III:

Money & Monetary Policy: Barter System, Money and Its Origin, Functions of Money, Quantity Theory of Money. Demand for Money, Credit Creation and Monetary Policy: Central Bank in India, Credit Creation, Monetary Policy and Its Tools and Objectives.

Unit IV:

Fiscal Policy and Issues in Economic Development: Introduction to Fiscal policy, Objectives of Fiscal Policy, Components, Budget Deficit and Its types, Unemployment, Inflation, Deflation, Depression.

Readings:

1. Managerial Economics: H.L. Ahuja, S. Chand Publication
2. Introductory Macro Economics: Sangita, Vaishali Kapoor, Taxmann's Publication
3. Macroeconomics and Indian Economy: Bhattacharya - Oxford University Press
4. Macro and Indian Economy: V K Puri- Himalaya Publishing House.
5. Macro and Indian Economy: P.K.Dhar - Kalyani Publisher.

Prerequisite: Basic knowledge of cost and management accounting.

Course Objectives: The objective of this course is to acquaint students to various concepts of advanced cost and managerial accounting techniques and their applications

Course Outcomes:

CO1: To understand the concept of standard costing and interpretation of variances

CO2: To gain the knowledge about budgeting process and preparation of budget

CO3: To explain the essential features of responsibility accounting.

CO4: To design the solutions to the contemporary issues in management accounting.

Pedagogy: Lectures, Case Study Analysis, Experiential Exercises and Assignments.

Unit- I:

Standard Costing & Variance Analysis: Meaning & Objectives of Standard Costing, Types of Standards, Setting of Standards, Variance Analysis – Material, Labour, Overheads, Sales and Profit Variances, Interpretation of the Variances.

Unit – II:

Budgeting & Budgetary Control: Concept of Budget, Budgeting and Budgetary Control; Budgeting Process, Advantages and Problems of Budgeting, Kinds of Budgets; Zero Base Budgeting, Cash Budget, Performance Budgeting.

Unit-III:

Responsibility Accounting: Responsibility Accounting- Meaning, Features, Objective, Assumptions, Problems, Responsibility Centres - Cost, Profit, Revenue and Investment, Measuring Divisional Performance - Introduction, Different Measures of Financial Performance.

Unit-IV:

Strategic Management Accounting: Target Costing; Kaizen Costing; Life Cycle Costing; Just-in-Time Approach; Value Chain Analysis; Cost Accounting Standards, Balanced Scorecard.

Readings:

1. Cost and Management Accounting – Ravi M Kishore – Taxmann Publications
2. Advanced Management Accounting – Prof. Jawahar Lal – S. Chand Publications
3. Cost and Management Accounting – Colin Drury – Cengage Learning
4. Cost and Management Accounting – Mitra, Oxford University Press
5. Cost and Management Accounting – M B Shukla – Himalaya Publishing House

Prerequisites: Basic knowledge on Indian financial system and computer application.

Course Objectives: To provide students with an understanding of the Fin-Tech and its various dimensions.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the Indian financial system and the role of technology in financial system.

CO2: Gain knowledge on financial technology and its various dimensions.

CO3: Understand the payment technology in the financial system.

CO4: Get knowledge on various regulations related to Fin-Tech industry in India.

Pedagogy: Lectures and Case Study Analysis.

Unit – I:

An Overview of Indian Financial System and Digital Finance: Structure and Components of Indian Financial System; Role of Effective Financial System in Economic Development, Role of Technology in Financial System, Digital Finance: Concepts, Advantages & Disadvantages, Digital Financial Literacy: Issues and Challenges.

Unit – II:

Introduction to Fin-Tech: Concept and Evolution, Fin-Tech Infrastructure, Types of Fin-Tech, Fin-Tech Hubs, Role of Fin-Tech in The Development of Financial System, Prospects and Challenges of Fin-tech in Indian.

Unit – III:

Pay Tech- Overview: RTGS, NEFT, ECS, Cards, PPIs, Wallets, Payment Banks, Payment Gateways, UPI/ IndiaStack, BHIM, Other NPCI Products - IMPS, RuPay, NFS, NACH, BharatBills Pay etc., Ripple, IoT in Payments, PayU, Issues and Challenges in Payment Technologies.

Unit – IV:

Fin-Tech Regulation: Issues & challenges: Fin-Tech Regulation in India, Data Regulation, Artificial Intelligence (AI) & Governance, Challenges of AI & Machine Learning, Block Chain, Wearable Technology.

Readings:

1. Avdhani, Investment and securities market in India, (Himalaya).
2. Bhole, L.M., Financial Markets and Institutions, (Tata Mc GrawHill).
3. John Hill, Fin-Tech and the Remaking of Financial Institutions, Elsevier Science.
4. Agustin Rubini, Fin-Tech in a Flash-Financial Technology Made Easy, De Gruyter.
5. Sanjay Phadke, Fin-Tech Future-The Digital DNA of Finance, SAGE Publications.

Prerequisites: Knowledge of financial management of business.

Course Objectives: To give the students a deep insight into the application of financial management concepts and approaches in taking strategic decisions.

Course Outcomes: After completion of this course the students will be able to:

CO1: Know the importance for strategic planning in financial decision making.

CO2: Assess the long-term investment projects that are subject to risk and uncertainty.

CO3: Gain insights on managing risk associated with investment in working capital.

CO4: Ascertain the worth of business and predict the financial sickness of business.

Pedagogy: Lectures, Case Study Analysis and Computer Application.

Unit –I:

Financial Strategy & Planning: Concept of Strategy & Its Features, Financial Management Decision: Investment, Financing & Dividend Decisions, Strategic Financial Management: Meaning, Concept, Need, Goal and Scope, Constraint to Strategic Financial Management, Financial Statement Analysis & Estimating Financial Requirement, Financial Forecasting Technique. Financial Planning Process.

Unit – II:

Long-Term Investment Decision & Its Risk Management: Capital Budgeting Decision under Risk and Uncertainty; Techniques for Incorporating Risk and Uncertainty in Capital Budgeting Decisions- Risk Adjusted Discount Rate (RADR), Certainty Equivalent Factor, Probability Distribution, Decision Tree Analysis, Sensitivity Analysis and Scenario Analysis.

Unit-III:

Short-Term Investment Decision & Its Risk Management: Estimation of Working Capital Requirement; Risk & Uncertainty Approaches of Working Capital Financing: Aggressive Vs. Conservative; Management of Cash Holdings: Baumol's Model and Miller-Orr Model, Cash Budget, Management of Inventories and Receivables.

Unit- IV:

Business Valuation & Financial Distress: Meaning of Value and Factors Affecting Value, Strategic Valuation, Equity Vs. Enterprise Valuation, Asset Based Valuation, DCF Valuation Models, Residual Income Valuation.

Merger & Acquisition: Process and Structure, Types of Mergers, Drivers of M&A, Merger Payoffs, M&A and Share Price Behaviour, Corporate Acquisitions, Corporate Divestitures, Equity Carve Outs, Spin Offs and Leverage Buy Outs, Financial Restructuring, Corporate Turnarounds, Valuation Issues in M&A.

Financial Distress: Concept, Tools for Predicting Firms' Financial Distress and Liquidation Process.

Readings:

1. Brealey, R. A. and Myers S. C. *Principles of Corporate Finance*. McGraw Hill.
2. Chandra, P. *Strategic Financial Management*- Tata McGraw Hill.
3. Damodaran, A. *Valuation*. John Wiley & Sons.
4. Pandey, I. M. *Financial Management*. Vikas Publishing.
5. Ross, S. A. and Westerfield, R. W. *Corporate Finance*. McGraw Hill.

COMM C205 RESEARCH METHODOLOGY AND REPORT WRITING

Prerequisites: Basic knowledge on statistics and computer.

Course Objectives: The Objective of this course is to help the students to understand the use of various techniques of econometrics in research and writing a research report.

Course Outcomes: After completion of this course the students will be able to:

CO1: Describe the research process and various types of research.

CO2: Describe research design and various methods of collection & processing of data.

CO3: Know about selection of samples and testing of hypothesis.

CO4: Use computer to analyse the data and write report on the researched topic.

Pedagogy: Lectures, Case Study Analysis and Computer Application.

Unit-I:

Research: Meaning, Objectives, Types of Research, Research Process, Philosophy of Research, Approach to Research, Validity and Reliability in Research; Role of Research in Functional Areas: Finance, Marketing, Human Resource Development and Production.

Research Methodology: Research Process and Defining Research Problems.

Unit-II:

Research Design: Features of a Good Research Design; Sampling: Types, Sampling Design, Steps and Characteristics of a Good Sample Design.

Methods and Techniques of Data Collection: Types of Data: Primary and Secondary Data, Sources of Data : Questionnaire and Interviews Secondary Data; Data Processing.

Unit-III:

Testing of Hypotheses: Procedure for Hypotheses Testing- Use of Statistical Techniques for Testing of Hypotheses.

Testing of Samples: Sampling Distributions, Determining Size of the Sample. Sampling Errors.

Unit-IV:

Report Writing: Essentials of a Good Research Report; Types of Reports; Layout of a Research Report; Writing up of the Report; Evaluating a Research Report.

Readings:

1. Cooper & Schindler, Business Research Methods. New Delhi:TMGH.
2. Kothari, Research Methodology: Methods & Techniques, New Age Intl., NewDelhi.
3. Levin & Rubin, Statistics for Management. New Delhi:PHI.
4. Mark Gardener, "Beginning R The statistical Programing Language, Wiley India Pvt Ltd, New Delhi.
5. NareshMalhotra, Marketing Research: An Applied Orientation,Pearson.

**Non-Credit Course
COMM VAC1 START-UPS & ENTREPRENEURSHIP**

Prerequisites: Basic knowledge on business operations.

Course Objectives: To inculcate entrepreneurial skill and trait among the students so as to enable them to start their new ventures.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the role of entrepreneurs in economic development and factors motivating entrepreneurship.

CO2: Know the process of generating new ideas for the business and management of start-ups.

CO3: Become aware of the different sources of finance for starting a new venture.

CO4: Assess the marketing issues and challenges for the entrepreneurs.

Pedagogy: Lectures, Case Study Analysis and Assignments.

Unit I:

Entrepreneurship: Concept and Definitions, Entrepreneur vs. Intrapreneur; Entrepreneurial Qualities and Characteristics; Role of Entrepreneurship in Economic Development; Types of Entrepreneurs; Entrepreneurship Process; Factors Affecting Emergence of Entrepreneurship; Women Entrepreneurship; Social Entrepreneurship.

Unit II:

Creating Entrepreneurial Venture & Start-ups: Generating Business Idea- Sources of Innovation and Opportunities, Methods of Generating Ideas, Creativity and Entrepreneurship; Challenges in Managing Innovation; Intellectual Property Rights: Patents, Trademarks and Copyrights; Business Planning Process: Drawing Business Plan, Business Plan Failures; New Age Entrepreneurship; Forms of Business for Growth, Reason for Failure of Start-ups.

Unit III:

Entrepreneurial Finance: Debt and Equity Financing; Commercial Banks, Private Placements, Venture Capital, Institutions Support to Entrepreneurs; Lease Financing; Funding Opportunities for Start-ups in India.

Unit IV:

Marketing of Product & Services: Marketing Issues and Challenges for Entrepreneurs (Discussion and Case Analysis).

Readings:

1. Kumar, Arya, Entrepreneurship: Creating and Leading an Entrepreneurial Organization, Pearson, India.
2. Hishrich., Peters, Entrepreneurship: Starting, Developing and Managing a New Enterprise, Irwin
3. Acharya, S.C., Jena, B.M., and Lall, G.S. Fundamentals of Entrepreneurship, Nano Publishing House.
4. Taneja, Entrepreneurship, Galgotia Publishers.
5. Barringer, Brace R., and R. Duane Ireland, Entrepreneurship, Pearson Prentice Hall, New Jersey (USA)
6. Hisrich, Robert D., Michael Peters and Dean Shepherd, Entrepreneurship, Tata McGraw Hill, New Delhi

Semester-III

COMM CT300

PERSONAL FINANCIAL PLANNING

Prerequisites: Basis knowledge of income, savings and investment.

Course Objectives: To enable the student to manage their wealth effectively through proper personal financial planning.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the importance and process of financial planning.

CO2: Know various investment avenues available for individuals.

CO3: Manage both personal and financial risk of individuals.

CO4: Know the tax implication on personal financial planning.

Pedagogy: Lectures, Case Study Analysis and Assignments.

Unit-I:

Basics of Personal Financial Planning: Definition, Importance and Process of Financial Planning, Concept of Time Value of Money. Managing Investment Risk: Types of Risks, Measurement and Management of Risks and Financial Statements.

Unit-II:

Investment Vehicles: Investment Concerns, Small Saving Schemes, Fixed Income Instruments, Mutual Funds and Other Investment Schemes and Asset Classes. Investment Strategies: Various Strategies and Asset Allocation.

Unit-III:

Hedging of Risk: Investing in Stocks, Bonds and Commodities and Concept of Futures and Options. Insurance Planning: Personal Risk Management, Nature and Function of Insurance, Need Analysis and Various Insurance Products. Concept of Health Insurance.

Unit-IV:

Tax and Estate Planning: Various Heads of Incomes, Exemptions in Income Tax Applicable to Various Categories. Strategies of Putting Together a Complete Financial Plan: Benefits, Essential Components of Comprehensive Financial Plan. Implementing Personal Financial Plan, Ethical Issues Involved in Financial Planning.

Readings:

1. Buffet, Marry and Clark, David. *Warren Buffett and the Interpretation of Financial Statement*.
2. Fisher, A. Philip. *Common Stocks and Uncommon Profits*. Wiley.
3. Graham, Benjamin. *The Intelligent Investor*.
4. Keown, A. J. *Personal Finance – Turning money into wealth*. Pearson Publication,
5. Khurshed, Arif. *Initial Public Offerings: The mechanics and performance of IPOs*, Harriman
6. House Publishing
7. Madura, Jeff. *Personal Finance*. Pearson
8. Soota, Ashok and Gopalan, S. R. *Entrepreneurship Simplified: From Idea to IPO*. PenguinRandom House India.
9. Spier, Guy. *The Education of Value Investor*. Palgrave.
10. www.moneycontrol.com
11. www.valueresearch.com
12. www.marketsmojo.com
13. www.yahoofinance.com

COMM C301 INTERNSHIP PROJECT & PRESENTATION

Prerequisites: Domain knowledge, and knowledge of computer application.

Course Objectives: To provide practical exposure in the industry set up.

Course Outcomes: After completion of this course the students will be able to apply their academic learning in practice.

Pedagogy: Lectures, Discussion, Data Collection, Data Analysis and Report Writing.

Each student has to undergo internship training in industry for a period of FOUR weeks after the completion of the second semester (preferably during summer vacation) and are required to submit a Project Report under the supervision of an internal guide assigned by the Head/Coordinator of the Department. Two copies of the report shall be submitted to the Department for evaluation. The evaluation consists of 50 marks for project report and 50 marks for project report presentation.

Readings:

1. Cooper & Schindler, Business Research Methods. New Delhi:TMGH.
2. Kothari, Research Methodology: Methods & Techniques, New Age Intl., NewDelhi.
3. Levin & Rubin, Statistics for Management. New Delhi:PHI.
4. Mark Gardener, “Beginning R The statistical Programing Language, Wiley India Pvt Ltd, New Delhi.
5. Naresh Malhotra, Marketing Research: An Applied Orientation, Pearson.

Prerequisites: Basic knowledge of financial accounting.

Course Objectives: To expose students with definitive and comprehensive accountancy covering advanced and specialised accounting for companies as well as different types of organisations.

Course Outcomes: After completion of this course the students will be able to:

CO1: Develop insights on corporate restructuring and accounting for various types of restructuring.

CO2: Present and analyze consolidated financial statements of holding and subsidiary companies.

CO3: Develop the skill of preparation of financial statements of banking companies.

CO4: Gain knowledge and competency in accounting for insurance companies.

Pedagogy: Lectures, Assignments and Case Study Analysis.

Unit-I:

Corporate Reconstruction: Internal Reconstruction- Concept, Objectives, Provisions, Steps in Reconstruction Scheme, Methods of Internal Reconstruction and Accounting Treatments. External Reconstruction- Concept, Methods of Computation and Discharge of Purchase Consideration, Methods of Amalgamation and Accounting Treatments, Inter-company and Cross Holdings, Internal vs. External Reconstruction.

Unit-II:

Consolidated Financial Statements: Concepts of Holding Company and Subsidiary Company, Advantages and Disadvantages of Holdings Company. Consolidated Financial Statement- Concept, scope, Consolidation procedure, Loss of Control, Non-Controlling Interest, Disposal of Investment in Subsidiary, General Instruction for Preparation of Consolidated P/L Account and Balance Sheet, Treatment of Dividend Received from Subsidiary, Capital Profit and Revenue Profit.

Unit-III:

Accounting for Banking Companies: Banking Companies- Concept, Forms of Business, Non-banking Assets, Minimum Capital & Reserves, Preparation of P/L Account, and Balance Sheet as per Banking Regulation Act.

Unit-IV:

Accounting for Insurance Companies: Preparation of Revenue Account, Profit & Loss Account and Balance Sheet of Life and General Insurance Companies.

Readings:

1. Advanced Accountancy Volume-II – Maheshwari & Maheshwari – Vikas Publishing.
2. Modern Accountancy Volume II – Hanif Mukherjee – McGraw Hill Publication.
3. Advanced Accounts Volume II- Shukla, Grewal & Gupta- S. Chand & Company PVT. LTD.

COMM E303 INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

Prerequisites: Basic understanding of accounting, corporate finance, capital market and statistics.

Course Objectives: To expose the students on the various avenues available for effective investment and possible way to avoid risk in investments through portfolio Management.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the basic concepts of investment and portfolio.

CO2: Analyze the individual security.

CO3: Construct and Manage a Portfolio.

CO4: Evaluate and revise the portfolios.

Pedagogy: Lectures, Case Study Analysis and Computer Application.

Unit-I:

Introduction to Investment: Nature and Scope of Investment Analysis; Savings vs. Investment, Elements of Investment, Objectives of Investment, Investment Philosophy, Types of Investor, Investor, Speculator & Gambler, Investment Avenues, Features of Investment, Process of Investment, Contemporary Issues in Investment Management.

Measurement of Risk and Return: Measurement of Stock Return, Systematic Risk and Unsystematic Risk, Measurement of Beta. Measuring Risk and Return in Practice (Using Ms-Excel).

Unit-II:

Equity Analysis: Fundamental Analysis: Economic Analysis, Industry Analysis and Company Analysis. Technical Analysis: Various Prices and Volume Indicators, Indices: Various Types of Trends and Indices.

Market Efficiency: Concept and Importance, Random Walk Theory, the Efficient Market Hypothesis. Forms of Market Efficiency, Testing Different Form of Market Efficiency Using MS-Excel/SPSS

Unit-III:

Portfolio Management: Meaning, Importance and Objectives, Phase of Portfolio Management.

Portfolio Analysis: Estimating Rate of Return and Standard Deviation of Portfolio Returns; Effects of Combining Securities; Markowitz Risk-Return Optimization.

Unit-IV:

Single Index Model: Portfolio Risk: Portfolio Market Risk and Unique Risk, Sharpe's Optimization Solution. Capital Asset Pricing Model and Its Assumptions, Capital Market Line, Security Market Line; Risk Free Lending and Borrowing. Arbitrage Pricing Theory and Multifactor Asset Pricing Models.

Portfolio Revision & Evaluation: Need and Constraints, Revision Strategies, Formula Plans: Constant Dollar Value Plan, Constant Ratio Plan, Dollar Cost Averaging etc., Portfolio Performance Evaluation: Measure of Return, Risk Adjusted Measure of Performance Evaluation.

Readings:

1. Barua, Raghunathan and Verma: Portfolio Management, Tata McGraw Hill, Delhi.
2. Bhalla V. K. - Investment Management, Portfolio Analysis - S. Chand, New Delhi.
3. Clark, James Francis: Investment management. McGraw Hill, International Edition, New York.
4. Fabozzi Frank J; Investment Management, Prentice. Hall, international Edition, New York.
5. Fischer D.E. and Jordan R.J, Security Analysis and Portfolio Management, Prentice Hall, Delhi.
6. Kevin S: Portfolio Management, Prentice Hall, New Delhi.
7. Shalini Talwar, Security Analysis & Portfolio Management, Cengage, New Delhi
8. Sharpe William F., Gordon J Alexander and J.V. Baily: Investments, Prentice Hall, Delhi.
9. Strong Robert; Portfolio Construction: Management and Protection, West Publishing Co.
10. Zvi Bodie, Alex Kane AJ Marcus and Pitabas Mohanty: Investments, McGraw Hill, Chennai.

Prerequisites: Basic understanding of accounting, corporate finance, capital market and statistics.

Course Objectives: To introduce the students to the application of various tools and techniques of financial risk management.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the concept of risk and derivatives.

CO2: Make option strategies.

CO3: Make futures and swap strategies.

CO4: Understand the risk hedging schemes.

Pedagogy: Lectures, Case Study Analysis and Computer Application.

Unit-I:

Source of Financial Risk: Credit vs. Market, Default Risk, Foreign Exchange Risk, Interest Rate Risk, Purchasing Power Risk etc.; Systematic and Non-Systematic Risk.

Introduction to Derivatives: Meaning and Purpose of Derivatives; Forward Contracts, Future Contracts, Options, Swaps and Other Derivatives; Types of Traders.

Unit-II:

Options: Types of Options; Option Trading; Margins; Valuation of Options; Binomial Option Pricing Modal; Black-Scholes Model for Call Options; Valuation of Put Options; Index Options; Option Markets-Exchange Traded Options, over the Counter Options.

Unit-III:

Futures: Mechanisms of Future Contracts; Specification of the Future Contracts; Operation of Margins.

SWAPS: Mechanisms of Interest Rate Swaps, Valuation of Interest Rate Swaps; Currency Swaps and Its Valuation; Credit Risk and Swaps.

Unit-IV:

Managing Market Risk: Hedging Schemes- Delta Hedging, Theta, Gamma. Relationship in Delta, Theta, Gamma, Vega and Rho; Portfolio Insurance.

Derivatives Market in India: Present position in India, Regulation, Working and Trading Activity.

Readings:

1. Yaragol, Prakash B: Financial Derivatives: Text and Cases, Vikas Publication.
2. Gupta, S.L.: Financial Derivatives: Theory, Concepts, and Problems, PHI Publication
3. Chance, Don M: An Introduction to Derivatives, Dryden press, International Edition.
1. Chew, Lilian: Managing derivative risk, John Wiley, New Jersey.
2. Das Satyajit: Swap & Derivative Financing, Probus,
3. Hull J. Options: Future and other derivatives, Prentice Hall, New Delhi.
4. Kolb Robert W: Understanding Future Markets, Prentice Hall Inc., New Delhi
5. Kolb Robert: Financial Derivatives, New York Institute of Finance, New York

Prerequisites: Basic knowledge of corporate finance and financial markets.

Course Objectives: To provide the student with knowledge to understand the difference between the classical financial theory and behavioural finance. The course is focused on the specific features of decision-making process in a market that is not strongly efficient.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand and model the behaviour of investors.

CO2: Recognise the factors of influencing the investors' behaviour.

CO3: Analyse various market hypotheses and know the level of efficiency of the market.

CO4: Identify the behavioural influence on corporate decision making.

Pedagogy: Lectures, Case Study Analysis and Computer Application.

Unit-I

Conventional Finance and Behavioural Finance: Assumptions, Differences, and Reconciliation. Neoclassical Finance; Empirical Anomalies and Their Behavioural Explanations: Investor Behaviour and Its Modelling.

Unit-II:

Heuristic: Driven Biases, Frame Dependence, Socio-Emotional Influences; Information Processing: Bayesian Rationality, Heuristically Shortcuts, Cognitive Paths. Bounded Rationality.

Unit-III:

Behavioural Challenges To Corporate Finance Theories: Structure Irrelevance and Behavioural Factors, Dividend Irrelevance, and Behavioural Factors. Market Efficiency: Adaptive Markets Hypothesis and Market Ecology.

Unit-IV:

Corporate Decision-Making Under Behavioural Influence: Behavioural Challenges to Asset Management Theories: Systematic Underperformance. Active Portfolio Management and Alpha Hunting; Socio-Psychological Challenges to Financial Markets.

Readings:

1. Ackert, L., and R. Deaves, Behavioral Finance: Psychology, Decision-Making and Markets, South-Western Cengage Learning, Mason, Ohio.
2. Behavioral finance - Wiley Finance - Joachim Goldberg, Rüdiger von Nitzsch.
3. Behavioral Finance: Psychology, Decision-Making, and Markets", by Ackert and Deaves.
4. Mitchell, O. S., and S. P. Utkus, eds. Pension Design and Structure: New Lessons from Behavioral Finance (Oxford University Press, New York, New York).
5. Montier, James: Behavioural Finance, John Wiley & Sons, New York.
6. Nofsinger, J. R., Investment Madness, Prentice Hall.
7. Plous, S. The psychology of judgment and decision-making NY: McGraw Hill.
8. Shleifer, Andrei, Are Financial Markets Efficient?, Chapter 1 in Inefficient Markets, Oxford University Press.
9. Understanding Behavioral Finance by Ackert Nofsinger, Pearson Prentice Hall, (4th Edition).
10. What Investors Really Want - Learn the lessons of behavioral Finance, Meir Statman, McGraw-Hill.

Prerequisites: Basic knowledge of financial institutions.

Course Objectives: To develop the necessary skills among the students in applying the principles of financial analysis and risk management to manage the funds in financial institutions.

Course Outcomes: After completion of this course the students will be able to:

CO1: Gain knowledge on working and capital requirements of financial institutions.

CO2: Know the techniques of managing assets and liabilities of financial institutions.

CO3: Analyse various means of managing risk financial institutions.

CO4: Know the mechanism of evaluating loan request and granting loans by financial institutions.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Types of Financial Institutions, Recent Trends in Domestic and Global Financial Systems, Classification of Commercial Banks, NBFCs, Capital Adequacy Requirements under Basel II and III, NPAs, Strategies of Managing NPAs.

Unit-II:

Introduction to ALM and Techniques, Managing Currency Exposures, Earnings Sensitivity Analysis, Structured Finance Products Including Asset-Backed Commercial Paper, Mortgage-Backed Securities, Collateralised Debt Obligations and Structured Investment Vehicles, Securitisation and Balance Sheet Management

Unit-III:

Management of Interest Rate Risk, Interest Sensitive Gap, Maturity Model, Duration Gap, Immunization Strategies; Management of Market Risk, Risk Metrics Model, Historic Model, BIS Regulations and Large-Bank Internal Models; Liquidity Risk, Sovereign Risk, Foreign Exchange Risk.

Unit-IV:

Introduction and Overview, Evaluating Commercial and Consumer Loan Requests, Customer Profitability Analysis and Loan Pricing, Credit Rating, Structural Credit Risk Models, Credit VAR, Expected Shortfall, Recovery Rate/Loss Given Default (LGD) Introduction to Merton's Model & Moody's Analytics Model.

Readings:

1. G. Ramesh Babu, Management of Financial Institutions In India, Concept Publishing Company.
2. John Hull, Risk Management and Financial Institutions, Wiley.
3. Meera Sharma, Management of Financial Institutions-With Emphasis on Bank and Risk Management, PHI Learning.
4. Madhu Vij, Management of Financial Institutions in India, Amol Publications.
5. Nigam Srivastava, Management of Indian Financial Institutions, Himalaya Publishing House.

Prerequisites: Basic knowledge of financial institutions.

Course Objectives: To acquaint students with the concept of various financial services those are currently in operation in the Indian financial system.

Course Outcomes: After completion of this course the students will be able to:

CO1: Know the role of merchant banking and forms of venture capital financing available for business.

CO2: Understand the lease and hire-purchase as a source of finance for the business.

CO3: Aware of factoring, forfaiting and credit rating services in India.

CO4: Understand the dematerialisation of securities and the marketing strategy for financial services.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Financial Services: Concept and Overview.

Merchant Banking: Concept, Services Rendered by Merchant Banks, Merchant Banks in India, Regulation of Merchant Banks, Problems of Merchant Banks.

Venture Capital Financing: Concept, Features, Origin and Growth of Venture Capital, Schemes and Methods of Venture Capital Financing, SEBI Guidelines and Problems of Venture Capital in India.

Unit-II:

Lease Finance: Concept, Types of Leasing, Leasing in India, Factors Influencing Lease Verses Buying Decision, Problems of Leasing Companies.

Hire Purchase: Concept, Growth, Types of Hire Purchase, Problems and Prospects of Hire Purchase in India.

Unit-III:

Factoring: Concept, Types of Factoring, Legal Aspects, Factoring Mechanism, Problems of Factoring.

Forfaiting: Concept, Benefits, Mechanism, and Difference between Factoring and Forfaiting.

Credit Rating: Concept, Credit Rating Agencies: CRISIL, ICRA, CARE & Others, Techniques of Credit Rating, Rating Methodology, Rating Symbols, Ethical Issues and Problems in Credit Rating.

Unit-IV:

Depository System and Dematerialization: Concept, Depository, Depository Participants, SEBI Guidelines, Dematerialization of Shares, Dematerialization Process, Advantages and Drawbacks.

Marketing of Financial Services: Financial Services Marketing Verses Goods Marketing, Services Marketing Mix, Marketing Strategy for Financial Services: Stages in formulation, Types of Strategy.

Readings:

1. Avadhani, V.A., Investment and Securities Market in India, (Himalaya).
2. Balajee: Services Marketing Management, S. Chand, N. Delhi.
3. Gordon and Natarajan, Financial Markets & Services, (Himalaya).
4. Gupta, S.K. and Agarwal, N. Financial Services, (Kalyani Publishers).
5. Guruswamy S., Financial Services and Systems, (Vijay Nicole P. Ltd).
6. Khan, M.Y., Financial Services, (Tata Mc.Graw Hill).
7. Machiraju, HR, Indian Financial System, (Vikas).
8. Machiraju, HR, Merchant Banking, (New Age International Publishers).
9. O.P. Agarwal, Environment & Management of Financial Services, (Himalaya) .
10. Payne, Adrian: the Essence of Services Marketing, Prentice Hall, New Delhi.
11. Pezullo, Marketing Financial Services, (Mc.Millan India Ltd.).

Prerequisites: Basic knowledge of marketing management.

Course Objectives: To enable the students to learn the concept and issues of international marketing, analyze foreign market environment and develop international marketing strategies.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand international marketing environment and the process of international marketing.

CO2: Understand decisions related to international product planning and pricing.

CO3: Explain methods of promoting a product in foreign markets and understand issues involved in it.

CO4: Know the channels of distribution and the emerging trends in international marketing.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

International Marketing Environment: Typology of International Marketing Environment; Influence of Foreign Market's Physical, Economic, Socio-Cultural, Political and Legal Environments on International Marketing Decisions; Global Trading Environment and Developments.

International Market Segmentation, Targeting and Positioning; Screening and Selection of Foreign Markets; International Market Entry Strategies—Exporting, Licensing, Contract Manufacturing, Joint Venture, Wholly-Owned Subsidiaries Aboard.

Unit-II:

International Product and Pricing Decisions: Major Product Decisions—Product Quality, Design, Labelling, Packaging, Branding and Product Support Services; Issue of Product Standardization vs. Adaptation; International Trade Product Life Cycle; New Product Development.

Pricing Decisions for International Markets: Factors Influencing International Price Determination; International Pricing Process, Policies and Strategies, Delivery Terms and Currency for Export Price Quotations, Standardised vs. Differentiated Pricing Strategies, Transfer Pricing.

Unit-III:

International Promotion Strategies: Communications Across Countries - Complexities and Issues; Country-of-Origin Effects and Strategies for Dealing with Adverse Country-of-Origin Effects; International Promotion Mix: Concept, Tools and Their Key Features; Developing International Promotion Campaign; Standardization vs. Adaptation Issue; Planning for Direct Mail, Sales Literature, Trade Fairs and International Advertising; International Sales Force Management: Process and Major Issues.

Unit-IV:

International Distribution Decisions: Distribution Channel Strategy; Different Types of International Distribution Channels, Their Roles and Functions; Selection and Management of Overseas Middlemen; International Distribution Logistics—Inventory Management, Transportation, Warehousing, and Insurance.

Emerging Trends in International Marketing: International Marketing Through Internet; Ecological Concerns in International Marketing, International Marketing Ethics.

Readings:

1. Cateora, Phillip R., Grahm, John L. & Gilly, Mary (2016). *International Marketing*. Tata McGraw Hill.
2. Czinkota, Michael R. & Ronkainen, Ilka A. (2013). *International Marketing*. Cengage Learning.
3. Joshi, Rakesh M. (2014). *International Marketing*. Oxford University Press.
4. Keegan, Warran J. & Green, Mark C. (2015). *Global Marketing*. Pearson.
5. Kotabe, Masaaki and Helsen, Kristiaan (2010). *Global Marketing Management*. John Wiley & Sons.
6. Onkvist, Sak & Shaw, John J. (2009). *International Marketing; Analysis and Strategy*. Psychology Press.
7. Terpstra, Vern Foley, James & Sarathy, Ravi (2012). *International Marketing*. Naper Press.

Prerequisites: Basic knowledge of marketing management.

Course Objectives: To acquaint the students with the concepts and tools of supply chain management and logistics as relevant for a business.

Course Outcomes: After completion of this course the students will be able to:

CO1: Describe supply chain management and logistics concepts at macro and micro levels.

CO2: Understand the role of logistics in relation to procurement, transportation, and warehousing.

CO3: Understanding the role of Relationship Marketing in SCM.

CO4: Know the Challenges in Logistics and Supply Chain Management.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Introduction: Evolution, Importance, Scope, Concept of Supply Chain Management (SCM) and Trade Logistics, Supply Chain Management as a Management Philosophy, Function of SCM, Value Chain for Supply Chain Management, Design of SCM.

Logistic Activities: An Overview, Contribution of Logistics at Macro and Micro Levels, SCM and Trade Logistics, Logistics and Competitive Advantage, Logistics Mix, Concept, Span and Process of Integrated SCM, Difference between Logistics and SCM.

Unit-II:

Focus Areas of Logistics and Supply Chain Management: Product Development Process and SCM, Purchasing Cycle, Types of Purchases, JIT Purchasing, Strategic Role of Purchasing in The Supply Chain and Total Customer Satisfaction, Purchasing vs. Procurement, Procurement Strategies, Transportation: Introduction, Objectives, Modes of Transportation, Importance of Effective Transportation System; Warehousing: Reasons for Warehousing, Warehousing Evaluation and Requirements, Warehousing Location Strategies. Logistical Packaging: Objectives and Concept of Logistical Packaging, Types of Packaging Material, Packaging Costs.

Unit-III:

Behavioural Issues in Supply Chain Management: Role of Relationship Marketing in SCM, Managing Relationships with Suppliers and Customers, Captive Buyers and Suppliers, Strategic Partnerships, Supplier-Retailer Collaboration and Alliances.

Performance Measurement: Framework of Performance Indicators, Methods of Performance Measurement, and The Balanced Score Card Approach, Benchmarking, Supply Chain Metrics (KPIs), Performance Measurement and Continuous Improvement.

Unit-IV:

Trends and Challenges in Logistics and Supply Chain Management: Third Party and Fourth Party Logistic Outsourcing- Challenges and Future Directions; Reverse Logistics; Bullwhip Effect; Push Based and Pull Based Systems; Green Supply Chain Management; E-Commerce Logistics: Requirements of Logistics in E-Commerce, EDI, Bar Coding, RFID; Re-Engineering the Supply Chain-Future Directions.

Readings:

1. Bozarth, C.C. & Handfield, R. B. *Introduction to Operations and Supply Chain Management*. Pearson Education.
2. Chopra, S. & Meindl, P. *Supply Chain Management: Strategy, Planning and Operation*, Pearson Education.
3. Christopher, M., *Logistics and Supply Chain Management*. Prentice Hall.
4. Hult, M. G., Closs, D., Frayer, D. Global. *Supply Chain Management: Leveraging Processes, Measurements, and Tools for Strategic Corporate Advantage*. McGraw Hill Ltd.
5. Shapiro, J.F. *Modelling the Supply Chain*, Cengage Learning.

Prerequisites: Basic understanding marketing management.

Course Objectives: To provide an in-depth understanding of the consumer buying processes and their determinants as relevant for marketing decision making.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand consumer behaviour and consumer decision making process.

CO2: Describe the underlying variables resulting into differences in consumer decision making.

CO3: Know the socio-cultural factors affecting consumer decision making.

CO4: Understand the models of consumer behaviour.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Consumer Behaviour: Importance and Nature of Consumer Behaviour, Types of Consumers and Their Role, Consumer Behaviour and Marketing Concept, Changing Profile of Indian Consumers and New Consumption Patterns.

Consumer Decision Making Process: Buying Motives, Buying Roles, Consumer Buying Process, Stages and Levels of Consumer Decision Making, Business Buying Behaviour: an Overview, Theories of Motivation and Its Application.

Unit-II:

Personal Factors Affecting Consumer Behaviour: Demographic Characteristics, Family, Family Life Cycle and Consumer Decision Making, Household Influence on Consumer Buying Behaviour, Needs and Motivation, Perception, Perceptual Mapping and Positioning, Value Perceptions, Attitude and Attitude Change, Attitude Models, Learning and Learning Theories, Consumer Involvement: Antecedents and Consequences, Personality: Concept and Personality Theories, Psychographics, Life Style and Applications.

Unit-III:

Socio-Cultural Determinants of Consumer Behaviour: Reference Group Influences- Theories of Reference Group and Applications, WOM Communication and Opinion Leaders, Social Class and Social Class Stratification in India, Understanding Cultural and Sub-Cultural Influences on Individual, Norms and Their Role, Customs, Traditions and Value System Consumer Socialization and Inter-Generational Influences; Cross-Cultural Dimensions of Consumer Behaviour.

Unit-IV:

Models of Consumer Behaviour and Business Buying Behaviour: An Overview of Contemporary Models, Deterministic and Probabilistic Approaches, Contemporary Models of Consumer Behaviour.

Readings:

1. Blackwell, R. D., Miniard, P. W., & Engel, J. F. *Consumer Behavior*. New Delhi: Cengage Learning
2. Hawkins, D. I., Motherbaugh, D. L., & Mookerjee, A. *Consumer Behavior: Building Marketing Strategies*. Chennai: McGraw Hill Education (India)
3. Schiffman, L. G., & Kanuk, L. L. *Consumer Behaviour*. Prentice Hall.

COMM VAC2 **Non-Credit Course**
TRADING IN STOCK MARKET

Prerequisites: Basic knowledge of Indian capital market.

Course Objectives: To develop the ability to understand and trade by analysing the stocks in Indian stock market.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the capital market at national and global level.

CO2: Know the process of public issues and listing of stock in exchanges.

CO3: Get acquainted with the trading procedure in stock markets.

CO4: Analyse different trading options available in the stock markets.

Pedagogy: Lectures, Case study Analysis, Experiential exercises.

Unit-I:

Introduction to Stock Markets: Primary Market and Secondary Market, Understanding Indices, Integration among World Markets.

Unit-II:

IPO Analysis: Understanding Prospectus, Application Procedure, Understanding the Concept of Gray Market Premium, Listing Gains.

Unit-III:

Trading in Stock Market: Requirements for Trading in Stock Market, Demat Account, Segments of Market, Trading Methods, Awareness on Stock Market Frauds, Technical Analysis vs. Fundamental Analysis

Unit-IV:

Trading in Derivatives: Buying and Selling of Futures and Options, Margin Trading, Option Chain Analysis, Open Interest, Volume, ITM, ATM, OTM, Strategies in Option Buying.

Readings:

1. The Little Book of Common Sense Investing by Jack Bogle.
2. A Random Walk Down Wall Street by Burton G. Malkiel.
3. The Intelligent Investor by Benjamin Graham.
4. One Up On Wall Street by Peter Lynch.
5. The Warren Buffett Way by Robert G. Hagstrom.
6. How to Make Money in Stocks by William J. O'Neil.
7. Stocks to Riches by Parag Parikh.
8. How To Avoid Loss and Earn Consistently by Prasenjit Paul.

Semester-IV

COMM C401

STRATEGIC MANAGEMENT & CORPORATE GOVERNANCE

Prerequisites: Basic knowledge on business environment and business management.

Course Objectives: To enable the students to analyse the business environment and prepare appropriate strategy for the organisation. Further, to provide a deeper understanding on how organisations are governed and managed.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the concept of strategy and formulate strategy for business.

CO2: Know how the strategies are implemented and evaluated.

CO3: Know the corporate governance issues and landmark governance guidelines.

CO4: Understand the role of agents, institutions and government in good corporate governance.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Concept of Strategy: Defining Strategy; Approaches to Strategic Decision Making; Strategic Intents; Limitation of Strategic Management, Strategic Analysis: External Analysis and Internal Analysis.

Strategy Formulation and Choice of Alternatives: Strategies- Stability, Growth, Modernization, Diversification, Retrenchment, Integration; Merger, Take-Over and Joint Venture Strategies; Turnaround, Divestment and Liquidation Strategies.

Unit-II:

Strategy Implementation: Inter-Relationship Between Formulation and Implementation; Issues in Strategy Implementation; Resource Allocation. Strategy and Structure: Structural Considerations.

Strategy Evaluation: Overview of Strategic Evaluation; Strategic Control; Techniques of Strategic Evaluation and Control, Problem in Management and Evaluation.

Unit-III:

Corporate Governance (CG): Meaning, Historical Perspective, Issues in CG, Theoretical Basis of CG, CG Mechanism, CG Systems, Good CG. Landmarks in the Emergence of CG: Composition of CG, World Bank on CG, OECD Principles, Sarbanes-Oxely Act, 2002, Indian Committees and Guidelines, CII Initiatives.

Unit IV: Corporate Governance Stakeholders

Rights & Duties of Shareholders, Investors Problems & Protection, CG & Other Stakeholders, Role of Regulators & Government.

Readings:

1. Bhattachary, S.K. and N. Venkataramin: Managing Business Enterprises: Strategies, Structures and Systems, Vikas Publishing House, New Delhi.
2. Bhattacharya S.C. - Strategic Management - S. Chand, New Delhi.
3. Budhiraja, S.B. and M.B. Athreya: Cases in Strategic Management, Tata McGraw Hill, New Delhi.
4. Coulter, Mary K: Strategic Management in Action, Prentice Hall.
5. H. Igor, Ansoff: Implanting Strategic Management, Prentice Hall. New Jersey.
6. Kazmi, Azhar: Business Policy, Tata McGraw Hill, Delhi
7. Rochard G. Hamermesh, Michael E. Porter; Business Policy: Text and Cases, Richard D. Irwin, Inc, Homewood.
8. Sontakki, C. N., Strategic Management, Kalyani, New Delhi.
9. Das, Corporate Governance in India, PHI.
10. Fernando A. C., Corporate Governance, Pearson Education.
11. Prasad, Corporate Governance, PHI.

Prerequisites: Knowledge of the discipline, statistics, and computer application.

Course Objectives: To instil research attitude and spirit among the students.

Course Outcomes: After completion of this course the students will be able to undertake research on their interested field and prepare a research report.

Pedagogy: Lectures, Discussion, Data Collection, Data Analysis and Report Writing.

Every student shall have an appropriate topic selected for preparing dissertation at the beginning of the fourth semester under the supervision of an Internal Guide assigned by the Head/Coordinator of the Department. The students are required to submit two copies of the Dissertation. The students shall be evaluated out of 100 marks comprising of 50 marks for dissertation and 50 marks for performance in the viva-voce.

Readings:

1. Cooper & Schindler, Business Research Methods. New Delhi:TMGH.
2. Kothari, Research Methodology: Methods & Techniques, New Age Intl., NewDelhi.
3. Levin & Rubin, Statistics for Management. New Delhi:PHI.
4. Mark Gardener, “Beginning R The statistical Programing Language, Wiley India Pvt Ltd, New Delhi.
5. Naresh Malhotra, Marketing Research: An Applied Orientation, Pearson.

Prerequisites: Basic knowledge of financial reporting.

Course Objectives: To let the students know the fundamentals of accounting standards and corporate reporting practices. This paper will help the students to gain the knowledge on selective accounting standard.

Course Outcomes: After completion of this course the students will be able to:

CO1: Have understanding of Indian Accounting Standard and its applicability in preparation of financial statements.

CO2: Understand different types of report prepared by the corporate and concept of triple bottom line.

CO3: Prepare statement of Cash flow statement and have broad idea about PPP and inventory valuation.

CO4: Gain idea about fair value measurement and the reporting practices followed of corporate.

Pedagogy: Lectures, Case Study Analysis and Assignments.

Unit-I:

Introduction to Indian Accounting Standards: Introduction, Applicability, Carve-Outs and Carve-Ins, Framework for the Preparation and Presentation of Financial Statements in Accordance with Indian Accounting Standards.

Unit-II:

Presentation of Financial Statements (Ind AS - 1), Separate Financial Statements (Ind AS - 27), Interim Financial Reporting (Ind AS - 34), Annual Report, Triple Bottom Line.

Unit-III:

Inventories (Ind AS - 2), Statement of Cash Flows (Ind AS-7), Property, Plant and Equipment (Ind AS-16), Income Tax (Ind AS -12).

Unit-IV:

Intangible Assets (Ind AS - 38), Impairment of Assets (Ind AS - 36), Fair Value Measurement (Ind AS - 113), Leases (Ind AS - 116).

Readings:

1. Chatterjee, B. D. & Jain Jinender, Illustrated Guide to Indian Accounting Standards (Ind AS), Taxmann, New Delhi.
2. Maller, S., Accounting under Ind AS, Bloomsbury, New Delhi.
3. Rawat, D. S. & Jain Jinender, Students' Guide To Ind ASs (Converged IFRSs), Taxmann, New Delhi.
4. Uma Devi. R., Reporting Practices-Financial and Non-Financial, CSMFL, India.

COMM E404 INTERNATIONAL ACCOUNTING & CORPORATE REPORTING

Prerequisites: Basic knowledge of financial accounting and reporting.

Course Objectives: To expose students to the prevailing International Accounting Systems and to increase the employability of students in MNCs.

Course Outcomes: After completion of this course the students will be able to:

CO1:Develop Insights on the different dimensions of the international accounting.

CO2:Know the country differences and harmonization of accounting practices.

CO3:Understand the operations of foreign currency translations mechanisms & transfer pricing.

CO4:Know the corporate reporting practices in India.

Pedagogy: Lectures, Case Study Analysis and Assignments.

Unit-I:

Introduction to International Accounting: Concepts of International Accounting, Its Importance and Scope, Development of International Accounting, Challenges of International Accounting

Unit-II:

Country Differences and Harmonization of Accounting Practices: Accounting Differences & Harmonization: Concepts, Reason for Difference in Accounting Practices, Need for Harmonization, Process for Harmonization, IFRS, Institutional Efforts for Harmonization: IASC, IFAC, IOSCO, UN, OECD, Impediments to Harmonization.

Unit-III:

Foreign Currency Translations & Transfer Pricing: Foreign Currency Translation: Concept of Foreign Currency Translation, Its Need and, Issues, Indian GAAP and Foreign Currency Translation, Accounting Treatment for Foreign Currency Transaction, US GAAP on Foreign Currency Translation.

Transfer Pricing: Concepts of Transfer Pricing and Its Need, Factors Governing Transfer Pricing Policy, Methods of Transfer Pricing: Cost Based, Market Based and Negotiated.

Unit-IV:

Corporate Reporting Practices: Overview of Corporate Report, Evolution of Corporate Report in India, Need and Types of Corporate Reports

Sustainability and Other Reporting: Triple Bottom Line Reporting, Global Reporting Initiative, ESG, Integrated Reporting, Business Responsibility Reporting, Management Discussion and Analysis.

Readings:

1. Comparative international accounting -Nobes Christopher & Parker Robert, Research Education, Asia, New Delhi.
2. International accounting a user perspective-Saudagaran, Shahorkh. M, Cengage learning India Pvt. Ltd, New Delhi.
3. International Accounting, MohapatraDas. A.K., Prentic Hall of India, New Delhi.
4. International accounting, Rathore, Shirin, PHI learning, New Delhi.
5. International Accounting-Peter Walton, International Thomson Business press.

Prerequisites: Basic knowledge of macroeconomics and international financial institutions.

Course Objectives: To provide the student a sound knowledge on international financial flows, exchange rate determination and management of financial exposure.

Course Outcomes: After completion of this course the students will be able to:

CO1: Acquire knowledge on international financial and monetary system.

CO2: Understand the mechanism of forex market.

CO4: Know the determination of exchange rates.

CO3: Appreciate role and importance of international financial institutions in international money flow.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Evolution of International Monetary system: Bimetallism (Before 1875), Classical Gold Standard (1873-1914), Inter –War Period (1915-1944), Brettonwoods System (1945-1972), Flexible Exchange Rate Arrangements; European Monetary System, The Euro and The European Monetary Union, **Currency Crisis:** The Mexican Peso Crisis, Asian Currency Crisis, Argentine Peso Crisis, Fixed vs. Flexible Exchange Rate Regimes.

Unit-II:

Balance of Payment and International Linkages: Balance of Payments and Its Components; BOP Accounting, BOP Trends in Major Countries, Coping with Current Account Deficit, Capital Account Convertibility – Pros and Cons, International Money Market – Euro Currency Market, Euro Credits, Forward Rate Agreements, Euro Notes – International Bond Market - Credit Rating and Indices of International Bond Market – Types of Instruments.

Unit-III:

Foreign Exchange Markets: International Equity Markets: Market Structure, Trading in International Equities, Cross Listing of Equities, GDRS, ADRS, IDRS, Global Registered Shares, International Equity Market Benchmark, Factors Affecting in International Equity Market. Functions and Structure of Forex Market – Forex Market Participants, Foreign Exchange Spot Rates, Forward, Futures, Options and Swap Market; Foreign Exchange Rate Determinants – International Parity Relationship, Interest Rate Parity, Purchasing Power Parity and International Fisher Effect.

Unit-IV:

Foreign Exchange and Management: Management of Transaction Exposure, Money Market Hedge, Hedging Foreign Currency Payable, Cross Hedging Minor Currency Exposure, Hedging Through Invoice Currencies, Hedging Via Lead and Lag, Exposure Netting; Management of Economic Exposure; Measurement of Economic Exposures, Determinants of Economic Exposure; Management of Translation Exposure – Translation Exposure Methods, FASB 8, 52, Management of Translation Exposure, Balance Sheet Hedge and Derivatives Hedge.

Readings:

1. Apte, P.G: International Financial Management, Tata McGraw Hill, New Delhi 2009,5th edition
2. Shapiro, Alan. C: Multinational Financial Management, Prentice-Hall, New Delhi. 2006,8th edition
3. Cheol S. Eun, Bruce G. Resnick: International Finance Management, McGraw Hill, 2009 5th Edition.
4. Buckley, Adrian: Multinational Finance, Prentice-Hall, New Delhi, 2020 5th Edition. Open Resource: <https://www.udemy.com/course/international-finance-i/>
5. Avadhani V.A., International Finance: Theory & Practice, Himalaya Publishing House, Mumbai.
6. .C. International Finance: Management Markets & Institutions, Prentice Hall of India, New Jersey.

COMM E406 TREASURY, INVESTMENT AND RISK MANAGEMENT

Prerequisites: Basic knowledge of financial instruments and banks.

Course Objectives: To equip students with tools and methods of analysing aspects related to international financial systems, Balance of Payments and International financial markets, besides making them aware of mitigating forex risk.

Course Outcomes: After completion of this course the students will be able to:

CO1: Acquire adequate knowledge on various types of securities available for investment.

CO2: Gain insights on treasury management.

CO3: Know the means of liquidity management.

CO4: Understand the role of RBI and technology in treasury management.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Debt Markets and Fixed Income Securities: Introduction, Terminologies, Types of Bonds, Govt. of India Securities, State Development Loans, other Approved Securities, Non SLR Securities, Public Sector Undertakings' (PSU) Bonds, Corporate Debentures, Bonds and Debentures, some other Aspects of Fixed Income Securities, Bond Dynamics, Discounted Cash Flow, Time Value of Money.

Interest Rate Quotations and Market Terminology: Introduction, Fixed and Floating Rate of Interest, Simple and Compound Rate of Interest, Yield, Premium and Discount, Front End and Rear End, Day Count Conventions.

Unit-II:

Treasury Management: Introduction, Sources of Profit for Treasury, Global Scenario, RBI Measures, Scope and Functions of Treasury Management, Nature of Treasury Assets and Liabilities, Objectives of Treasury, Organizational Structure, Integrated Treasury: Cost Centre and Profit Centre, Functions, Benefits.

Unit-III:

Liquidity Management: Objectives, Sources and Deployment, CRR, SLR, CCIL: Netting/ Elimination of Exposures, RTGS.

Risk Analysis and Control: Interest Rate Risk, Investment/ Trading Book, Value at Risk, Forex (Market) Risk.

Unit-IV:

Regulations, Supervision and Compliance of Treasury Operations: RBI Guidelines, Extracts from FIMMDA Handbook.

Role of Information Technology in Treasury Management: Negotiated Dealing System, Other Trading Platforms/ Systems, Straight Through Processing (STP), Settlement, Custody and Others.

Readings:

1. A. V. Avadhani, Treasury Management in India, Himalaya Publishing House.
2. Biagio Mazzi, Treasury Finance and Development Banking-A Guide to Credit, Debt, and Risk, Wiley.
3. Hong Kong Institute of Bankers (HKIB), Treasury Markets and Operations, Wiley.
4. S.K. Bagchi, Treasury Risk Management, Jaico Publishing House.

Prerequisites: Basic knowledge on bank operations and banking technology.

Course Objectives: To equip students with tools and methods of analysing aspects related to international financial systems, Balance of Payments and International financial markets, besides making them aware of mitigating forex risk.

Course Outcomes: After completion of this course the students will be able to:

CO1: To develop Insights about international banking operation

CO2: To know the activities of various international financial institution

CO3: To understand the treasury and risk mitigation

CO4: To develop the Skill to understand the international corporate finance

Pedagogy: Lectures and Case Study Analysis.

Unit I:

International Banking Operations: Global Trends and Developments in International Banking II (Wholesale Banking, Retail Banking, Private Banking, Inter-Bank Business III) International Financial Centres Offshore Banking Units, SEZs IV) Asset Liability Management V) Profitability of International Banking Operations VI) Investment Banking VII) Correspondent Banking

Unit-II:

International Financial Institutions: IMF, IBRD, BIS, IFC, ADB, WTO, Role of IMF and World Bank in International Debt Crisis Management, Treasury And Risk Mitigation: FEMA and Regulatory Framework in India, Letter of Credit Mechanism and UCPDC/ URC/ URR Buyer's/ Sellers Credit.

Unit-III:

International Corporate Finance: Fundamental Principles of Lending MNC, Documentation and Monitoring of Corporate Finance, International Credit Rating Agencies and Global Capital Markets, Raising Resources and Its Deployment, ECBs/ FCNRs

Unit-IV:

International Bond Market: Operations - Procedure and Significance, Regulatory Prescriptions, Revising Undertaking Facility, Note Issuance Facility System and Structure, Syndicated Loans, Project and Infrastructure Finance, Corporate Treasury Management, Derivatives; Corporate Application, Role Of FIIS, FDIS and EXIM Bank, Commodity Exchanges.

Readings:

1. Indian Institute of Banking & Finance: International Banking, Macmillan Publisher.
2. Jhingan, M.L.: Money, Banking, International Trade and Public Finance, Vrinda Publications
3. Indian Institute of Banking & Finance: International Banking Operations, Macmillan Publisher.

COMM E408

INSURANCE MANAGEMENT

Prerequisites: Basic knowledge of financial intermediaries and financial services.

Course Objectives: To make the students aware of the various insurable risks associated with life and property and the mechanism in mitigating such risks.

Course Outcomes: After completion of this course the students will be able to:

CO1: Know the concept and principles of insurance contract.

CO2: Gain insights on life, fire and marine insurance.

CO3: Understand the process of claim calculation and settlement.

CO4: Comprehend the concept of re-insurance and legal & social aspects of investment by insurers.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Introduction: Concepts & Features of Insurance, Types of Insurance; Essential of a Valid Contract, Fundamental principles of Insurance. Role of IRDA.

Unit-II:

Life Insurance: Fundamental Principles, Procedure for Taking a Policy, Kinds of Policies.

Fire Insurance: Fundamental Principles, Procedure, Premium, Assignment, Types of Fire Insurance.

Marine Insurance: Concepts, Contract, Procedure, Fundamental Principles, Form and Types of Policies.

Unit-III:

Insurance Claim: Claim Settlement Procedure, Claim for Loss of Stock, Claim for Loss of Profit.

Life Insurance: Settlement of Claims, Calculation of Benefit Payable on Maturity Claims, Death Claims, Adjustment for Loans, Unpaid Premiums and Interest. Foreclosure and Alterations.

Unit-IV:

Re-Insurance: General Features, Common Terms, Functions, Features, and Classification. Methods of Reinsurance, Proportional and Non-Proportional; Bank Assurance.

Risk and Investment Management: Concept, Types of Risks, Management and Control of Risks, Techniques of Risk Management. Investment: Investment Principles, Types and Legal and Social Aspect of Investment Policies of Insurance Companies.

Readings:

- 1 Arif Kran, .Theory and Practice of Insurance. Educational Book House.
- 2 Ganguly Anand "Insurance Act", New Age International Publication.
- 3 Greene and Trieschemann, . Risk Insurance, South Western Publishing Co.
- 4 Grieder and Beadles, 'Principles of Insurance'.
- 5 Gupta, P.K; Insurance & Risk Management, Himalaya, Bombay.
- 6 Insurance Law Manual, Taxman, Delhi.
- 7 Mishra M.N. Insurance principles &Parctice, S. Chand, New Delhi.
- 8 Periasami, P; Principles & Practices of Insurance, Himalaya, Bombay.
- 9 Rejda: Principles of Risk Management and Insurance, Pearson Education, New Delhi.
- 10 Shama R.S., Insurance Principles and Practice. Vora, Delhi.
- 11 Study Material of Insurance Institute of India, Bombay.

COMM E409 DIGITAL MARKETING

Prerequisites: Basic knowledge of marketing and communication technologies.

Course Objectives: To help students to acquire the basic conceptual knowledge of E-Marketing and to impart skills for use of technology in marketing.

Course Outcomes: After completion of this course the students will be able to:

CO1: Have an insight of the Internet in India, Search Engine Optimization, and Search Advertising.

CO2: Develop an idea on Display advertising, Web Analytics, and Consumers Online.

CO3: Gain awareness about Social Media Marketing, Social Media Analytics and mobile marketing.

CO4: Gain knowledge on Email Marketing, Internet marketing strategy and content marketing.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

The Adoption of Internet in India: Search Engine Marketing, Search Engine Optimization, Measuring SEO Success, Mapping the SEO Journey;

Search Advertising: Online Advertising Payment Models, Search Advertising (Desktop), Search Advertising for Mobile Devices, Planning and Executing a Search Advertising Campaign, Strategic Implications of Advertising on Search Network.

Unit-II:

Display Advertising: Concept, Display Advertising Targeting Options, Forms of Display Advertising, Planning and Executing a Display Advertisement Campaign, Strategic Implications of Advertising on Display Network.

Web Analytics: Data Type and Data Collection Technology, Web Analytics, Type of Media and Data Type, Analyzing User Behaviour.

Consumers Online: The Online Consumer – Decision Making Process, Consumer Segments, User Experience.

Unit-III:

Social Media Marketing: Social Media, Social Media Marketing, Social Media Marketing Strategy, Adopting Social Media in Organizations, Paid-Owned-Earned Media, Social CRM.

Social Media Analytics – Structured Data; Social Media Analytics: Unstructured Data.

Mobile Marketing: Mobile Internet in India, Mobile Marketing, Mobile Marketing Strategy, Forms of Mobile Marketing, Mobile Advertising, M-Commerce.

Unit-IV:

E-Mail Marketing: Email Marketing in India, E-Mail Marketing Concept and Strategy, Executing Email Marketing.

Internet Marketing Strategy and Content Marketing:

Internet Marketing Strategy, Content Marketing, Content Marketing In India.

Readings:

1. Internet Marketing: MoutusyMaity, Oxford University Press.
2. Digital Marketing: Seema Gupta- Tata Mcgraw Hill.
3. Fundamentals of Digital Marketing :Puneet Bhatia–Pearson
4. <https://ondigitalmarketing.com/learn/odm/>

Prerequisites: Basic concept of marketing management.

Course Objectives: The objective of this course is to facilitate the understanding of conceptual aspects of Retail Management, Supply Chain Management and Brand Management.

Course Outcomes: After completion of this course the students will be able to:

CO1: Know about the concept of retailing and retail management decisions.

CO2: Understand the strategic retail management mechanisms.

CO3: Know the supply chain management in retailing.

CO4: Become aware of the brand management techniques.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Introduction to Retailing: Meaning, Importance, Recent Trends, Retail Management Decision Process, Types, Opportunities.

Retailing Management Decision: Retail Market Segmentation and Location study, Retail Customer Buying Behaviour, Retail Marketing strategy, Retail Locations and Site Selection.

Unit-II:

Strategic Retail Marketing: Product and Merchandise Management, Pricing Strategies, Communication-Mix and Retailing Promotion; Store Layout and Management; Servicing Retail Customers.

Unit-III:

Supply Chain Management: Fundamentals of SCM, Demand Management, Operation Management, Logistic Management, Procure Management; Information and Technology, Performance Measurement and Control.

Unit-IV:

Brand Management: Meaning and Importance, types, Brand Planning, Brand Positioning, Brand Equity.

Readings:

1. Burman, Barry, Evans, J.E., "Retail Management", Pearson Education New Delhi.
2. Levy, Michael, Weitz, a, Barton, "Retail Management", Tata-McGraw Hill, New Delhi.
3. Pradhan, Swapna, "Retail Management", Tata-McGraw Hill, New Delhi.
4. Gilbert, D., "Retail Management", Pearson Education, New Delhi.
5. Bajaj, C., Tal Rajnish., Srivastava, Nidhi., "Retail Management", Tata McGraw Hill, New Delhi
6. Taylor, David A., "Supply Chain Management", Pearson Education, New Delhi.
7. Altekarr., R.V., "Supply Chain Management", Pearson Education, New Delhi.
8. Handfield, R.B., Nicholasm E.L., "Supply Chain Redesign", Pearson Education, New Delhi.
9. Ogden, J.R., "Integrated Retail Management", Biztantra Publication.
10. Chunawalla., S.A. "Brand Management", Himalayan Publishing House, New Delhi.
11. Henry, D., "Brand Management", Himalayan Publishing House, New Delhi.
12. Ramesh Kumar, S., "Marketing and Branding", PearsonEducatin, New Delhi.

Prerequisites: Basic knowledge on marketing and supply chain management.

Course Objectives: To understand the concepts and principles of customer relationship management (CRM) and to appreciate the role and changing face of CRM as an IT enabled function.

Course Outcomes: After completion of this course the students will be able to:

CO1: Understand the concept of the CRM.

CO2: Know the importance of the CRM in Marketing.

CO3: Learn how to manage and share customer data.

CO4: Develop the skill to implement CRM in a business.

Pedagogy: Lectures and Case Study Analysis.

Unit-I:

Introduction to CRM: CRM Concepts - Acquiring Customers, - Customer Loyalty and Optimizing Customer Relationships, CRM Success Factors, the Three Levels of Service/ Sales Profiling, Service Level Agreements (Slas), Creating and Managing Effective Slas.

Unit-II:

CRM in Marketing: One-to-One Relationship Marketing - Cross Selling & up Selling, Customer Retention, Behaviour Prediction - Customer Profitability & Value Modelling, Channel Optimization Event-Based Marketing, CRM and Customer Service, the Call Centre, Call Scripting Customer Satisfaction Measurement.

Unit-III:

Sales Force Automation: Sales Process, Activity, Contact- Lead and Knowledge Management Field Force Automation. CRM Links in E-Business - E-Commerce and Customer Relationships on the Internet - Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Supplier Relationship Management (SRM), Partner Relationship Management (PRM).

Analytical CRM: Managing and Sharing Customer Data - Customer Information Databases Ethics and Legalities of Data Use - Data Warehousing and Data Mining, Concepts of Data Analysis, Market Basket Analysis (MBA), Click Stream Analysis, Personalization and Collaborative Filtering.

Unit-IV:

CRM Implementation: Defining Success Factors, Preparing a Business Plan Requirement, Justification and Processes, Choosing CRM Tools, Defining Functionalities, Home Grown vs. Out-Sourced Approaches, Managing Customer Relationships Conflict, Complacency, Resetting the CRM Strategy. Selling CRM Internally, CRM Development Team, Scoping and Prioritizing Development and Delivery Measurement.

Readings:

1. Alok Kumar Rai, Customer Relationship Management-Concept & Cases, Prentice Hall of India Private Limited, New Delhi.
2. S. Shanmugasundaram, Customer Relationship Management, Prentice Hall of India Private Limited, New Delhi.
3. Kaushik Mukherjee, Customer Relationship Management, Prentice Hall of India Private Limited, New Delhi.
4. V. Kumar & Werner J., Customer Relationship Management, Willey India.

Non-Credit Course

COMM AC1

CULTURAL HERITAGE OF SOUTH ODISHA

(ଦକ୍ଷିଣଓଡ଼ିଶାର ସଂସ୍କୃତିକ ବିଭବ)

Aim of the Course (ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ)

Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as ‘BHANJA BIHAR’. South Odisha is the adorable storehouse of literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha.

(ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ମହାନାୟକ କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ । ବ୍ରହ୍ମପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ ତାଙ୍କ ନାମରେ ‘ଭଞ୍ଜ ବିହାର’ ଭାବରେ ନାମିତ । ଗଞ୍ଜାମ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶା ସମଗ୍ର ରାଜ୍ୟର ରୂପହସ୍ତକେଳି ସର । ଏହାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-

ଲୋକପରମ୍ପରା ସର୍ବଭାରତୀୟ ସ୍ତରୀକୁ ପ୍ରାପ୍ତ । ଏହାକୁ ଦୃଷ୍ଟିରେ ରଖି ବ୍ରହ୍ମପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ସ୍ନାତକୋତ୍ତର ଶ୍ରେଣୀର ସମସ୍ତ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ ସମେତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାହିତ୍ୟିକ ପ୍ରତିଭା ଏବଂ ଏହି ଅଞ୍ଚଳର କଳା, ସଂସ୍କୃତି, ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ସାଧାରଣ ଧାରଣା ପ୍ରଦାନ କରିବା ପାଇଁ ଏ ପରି ଅଧ୍ୟୟନ ବ୍ୟବସ୍ଥା କରାଯାଇଛି ।)

Course Outcomes (ପାଠ୍ୟକ୍ରମର ନିଷ୍ପତ୍ତି)

The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale.

(ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ଏହି ପରି ଏକ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଦିଗରେ ପାଠ୍ୟକ୍ରମର ବିଭାଗୀୟ ଲକ୍ଷ୍ୟ ଲେଖାଯାଇଛି । ଉପେନ୍ଦ୍ର ଭଞ୍ଜ ଓ ଦକ୍ଷିଣ ଓଡ଼ିଶାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-

ଆଦି ବାସୀ ଲୋକଜୀବନ ଓ ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟ ଛାତ୍ରଛାତ୍ରୀ ସଚେତନ ହୋଇ ପାରିବେ; ତାହା ନୁହେଁ, କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ ସହିତ ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସାହିତ୍ୟିକ ପରିମଣ ଏବଂ ଏହି ଅଞ୍ଚଳର ସଂସ୍କୃତିକ ବିଭବ ଓ ଲୋକପରମ୍ପରା ସମ୍ପର୍କରେ ବିଶ୍ୱବିଦ୍ୟାଳୟ ଛାତ୍ରଛାତ୍ରୀମାନେ ମଧ୍ୟ ସମ୍ୟକ ଜ୍ଞାନ ଆହରଣରେ ବ୍ରତୀ ହୋଇ ପାରିବେ ।)

This Paper consists of 50 marks with following 4 Units.

Unit-I: Literary works of Kabi Samrat Upendra Bhanja.	ୟୁନିଟ-୧: କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କୃତି ଓ କୃତିତ୍ୱ
Unit-II: Other Litterateurs of South Odisha	ୟୁନିଟ-୨: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାହିତ୍ୟିକ
Unit-III: Cultural Heritage of South Odisha	ୟୁନିଟ-୩: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସଂସ୍କୃତିକ ବିଭବ
Unit-IV: Folk and Tribal Traditions of South Odisha	ୟୁନିଟ-୪: ଦକ୍ଷିଣ ଓଡ଼ିଶାର ଆଦିବାସୀ ଓ ଲୋକପରମ୍ପରା

*****END*****

COURSES OF STUDY

M.Sc. in BOTANY

(Effective from the academic session 2023-2025)

Under Choice Based Credit System (CBCS)



**BERHAMPUR UNIVERSITY
BHANJA BIHAR
BERHAMPUR – 760 007 (GANJAM)
ODISHA
2023**

A brief profile of the Department

The department of Botany was established in the 1969 and founded by late Prof. Harihar Patanaik, a renowned algologist. Since its inception the department has grown appreciably, not only in terms of students and faculty strength but also in terms of the introduction of new courses, specializations and broadening research activities. The department is funded by the Government agencies in form of research grants from CSIR, UGC, DBT, DAE, MoEF and CC, Government of India, OFSD, S & T Department, Government of Odisha.

Program Outcome: M.Sc. in Botany

M.Sc. in Botany is a two years regular course, offered by PG department of Botany, Berhampur University. The present syllabus covers different components of theoretical and practical, as well as project work, field study and seminar presentations, which will help the students to get in depth knowledge on advanced Botany. During and after the completion of this course, students are expected to have an overall knowledge on Microbiology, different lower (Cryptogams) and higher plants (Phanerogams) diversity, their anatomy, physiology, biochemistry, biostatistics, reproductive biology, genetics, evolutionary history and Paleobotany etc. The students can learn about the origin and history of different cultivated plants, their economic importance, utilization and conservation of natural resources, different renewable and nonrenewable energy sources. The course curriculum is designed to introduce the students about sensory biology and stress physiology along with the hands on training on the theory and practical aspects of different instruments along with microbial and plant tissue culture. The course also encompasses an enriched knowledge on Ecology, environmental pollutions and different Environment laws. After completion of this course, students are expected to have practical knowledge on how to handle and operate basic instruments for their experimental purposes. They might have basic idea on experimental designing, project handling and writing their project reports, which may be beneficial for them in future and improve their capability to write notes and research articles for different scientific journals. The degree of M.Sc. Botany may open their path into academia/research career at national and international level as a scientist, as a teaching faculty or as a scholar or into different administrative positions.

Course Outcome

After successful completion of this course, students will be able to understand, the cell structures in relation to function of cells, the fundamental unit of life along with molecules present in cells, the concepts in prokaryotic, eukaryotic, and viral genetics, the central dogma of molecular biology (replication, transcription, and translation), the types of mutation, gene regulation and transposable element, the diversity of lower cryptogams (Algae, Fungi, Bacteria, and viruses), the collection and study of algae, fungi, bacteria from different natural sources, their identification up to generic level. After completion of the course the students will be familiar with various physiological aspects involved in the plant development, the role of enzymes in it and mechanism of photosynthesis, respiration, nitrogen and lipid metabolism. Identification of genus and species of locally available wild plants, preparation of botanical keys at generic level by locating key characters, knowledge of at least 10 medicinal plant species, the study of at least 20 locally available families of flowering plants and knowledge of secondary metabolites and its use in taxonomy, development of plant reproductive parts i.e. male, female gametophytes and fruits. Sterilization techniques for media as well as for explants and their culture, anther culture, pollen culture,

micropropagation, embryo rescue technique, somaclonal variation, isolation of plant protoplasts and their fusion techniques, tissue culture of important horticultural and medicinal plants etc. The students will also learn microbial isolation and pure culture techniques. The students will learn different aspects in Ecology, environmental problems and their mitigation rules along with different Environment laws.

Course curriculum

The Post-Graduate (M.Sc.) curricula in Botany is of two-year duration in choice based credit system (CBCS) with total of 88 Credit and 2000 marks. The system of examination is of semester pattern. There will be four semesters each consisting of five core/elective papers with 4 credit and 100 marks each along with two noncredit, value added courses one in 2nd and another in 3rd semester; one add-on course 4th semester. In first and second semester there will be 5 core papers including 4 theory and 1 practical paper. In third semester there will be one core theory and 1 practical along with one elective paper (interdisciplinary open for other department students) and 2 elective theory papers open for Botany students. In fourth semester there will be three core papers (1 core theory paper, one Seminar & Field Study/ Industrial Visit/Scientific Visit paper and one dissertation). Students have to present a subject relevant topic as seminar presentation in the department and submit a Field Study/ Industrial Visit/Scientific Visit report, which will be evaluated by the faculty members of the department and a dissertation/project work. Presentation of Seminar, carries 50 marks and Field Study/ Industrial Visit/Scientific Visit paper, carries 50 marks. For dissertation/project work, each student is required to work on a particular problem related to Botany/Biosciences with one of the faculty members of the Post Graduate department of Botany or from any reputed Universities/Institutes/Organizations to submit a thesis/dissertation with power point presentation, which carries 100 (75+25) marks (6 credits) to fulfill the Master's degree). In fourth Semester, there will be 2 elective theory papers open for Botany students. For all the theory papers 20 marks is for internal evaluation and 80 marks is for end term examination.

Core Research Areas

The faculty members of the department work on all current topics in Botany, ranging from Phycology, Microbiology, Ecology, Bioinformatics & Computational Biology, Molecular Biology, Biochemistry, etc.

Semester: I/II/III/IV - Credit: 88; Core 15; Elective: 05; Value added course: 02; Add on: 01

Course Structure of M.Sc. in Botany

Se m.	Course No.	Paper Name	Credit	Type (Core/ Elective)	Mid Term (Marks)	End term (Marks)	Total (Marks)
I	BOTA C101	Microbiology	4	Core	20	80	100
	BOTA C102	Lower Plant Diversity and Paleobotany	4	Core	20	80	100
	BOTA C103	Cell Biology and Evolution	4	Core	20	80	100
	BOTA C104	Genetics and Molecular Biology	4	Core	20	80	100
	BOTA P105	Practical	6	Core	-		100
Total Credits/core/electives (22/05/00) Total marks: 500							
II	BOTA C201	Systematics of Angiosperms	4	Core	20	80	100
	BOTA C202	Plant Physiology and	4	Core	20	80	100

		Metabolism					
	BOTA C203	Biochemistry and Biostatistics	4	Core	20	80	100
	BOTA C204	Ecology and Environment	4	Core	20	80	100
	BOTA P205	Practical	6	Core	-	-	100
	BOTA VAC206	Organic Farming	-	NC	-	-	Grade
Total Credits/core/electives (22/05/00) Total marks: 500							
III	BOTA C301	Plant Embryology and Anatomy	4	Core	20	80	100
	BOTA E302(A)	Molecular Plant Pathology and Immunology	4	Elective	20	80	100
	BOTA E302(B)	Natural Resources, Conservation and Utilization	4	Elective	20	80	100
	BOTA E303(A)	Computational Biology and Bioinformatics	4	Elective	20	80	100
	BOTA E303(B)	Environmental Biotechnology and Waste management	4	Elective	20	80	100
	BOTA P304	Practical	6	Core			100
	BOTA CT300*	Inter Disciplinary Elective#*	4	CBCT	20	80	100
	BOTA VAC305	Nursery and Horticulture Techniques	-	NC	-	-	Grade
Total Credits/core/electives (22/02/03) Total marks: 500							
IV	BOTA C401	Advanced Plant Biotechnology	4	Core	20	80	100
	BOTA C402	Seminar presentation and Field Study/ Scientific Visit	4	Core	20	80	(50+50)100
	BOTA E403(A)	Microbial and Molecular Techniques	4	Elective	20	80	100
	BOTAE403 (B)	Molecular Stress Biology and Biotechnology of Cyanobacteria	4	Elective	20	80	100
	BOTA E404(A)	Phytomedicine	4	Elective	20	80	100
	BOTA E404(B)	Environment Law	4	Elective	20	80	100
	BOTA D405	Dissertation (Project Work)	6	Core			100
	BOTA AC406	Cultural Heritage of Ganjam	-	NC	-	-	Grade
Total Credits/core/electives (22/03/02) Total marks: 500							
Total Credit: 88				Total Marks: 2000			

CBCT (Inter Disciplinary Elective Papers)*(# Students have to choose one of the following courses except 'BOTA-CT-300')**

BOTA-CT-300: Economic Botany (Offered by Dept. of Botany)

BIOT-CT-300: Biotechnology in Human Welfare (Offered by Dept. of Biotechnology)

ENVS-CT-300: Population and Environmental Issues (Offered by Dept. of Environment Studies)

MARB-CT-300: Environmental Impact Assessment and Management plans (Offered by Dept. of Marine Science)

ZOOL-CT-300: Conservation Biology (Offered by Dept. of Zoology)

Value added course: BOTA- VAC-206; BOTA- VAC-305

Add On Course (AC): BOTA-AC-406: Cultural Heritage of South Odisha

Code Used: BOTA- Botany, C- Core, P- Practical, D- Dissertation, CT- Choice Based Credit Transfer), VAC- Value Added Course, AC- Add-on Course, NC- Non-Credit

*3rd semester students can opt for two elective courses BOTA E302 (A) or (B), BOTA E303 (A) or (B) and one CBCT course offered by other departments. Other department students can opt for BOTA CT300.

** 4th semester students can opt for two elective courses BOTA E403 (A) or (B), BOTA E404 (A) or (B)

(BOTA: Botany, C: Core, E: Elective; P: Practical, VAC: Value Added Course, AC: Add on course & D: Dissertation).

DETAILS OF SYLLABUS

SEMESTER: I

Semester: I Course No: BOTA C101

Course Name: Microbiology

Credits: 4

Core/Elective: Core

Course details

Chapter	Contents	Hours
Unit- I	History and development of Microbiology: History and scope of Microbiology, Microbial evolution, classification of microorganisms, five kingdom classification, three domain classification; modern approaches in microbial taxonomy, ribosomal RNA sequencing; Bergy's manual of bacterial classification, role of bacteria and archaea in human health, medicine, agriculture and industry.	12
Unit- II	Bacteria and Archaea: Cell structure; nutrition; reproduction; Bacterial genetics: conjugation, transduction and transformation, sex-duction, mapping genes by interrupted mating; plasmid; episome; microbial growth & methods of microbial growth measurements; bacterial toxin General features and pathogenicity of Mycoplasma, Rickettsia and Spirochetes.	12
Unit- III	Cyanobacteria: Classification, cell structure, nutrition, reproduction, cellular differentiation, akinetes and its function, heterocyst (heterocyte) and its function, cyanotoxin; role of cyanobacteria in human health, medicine, agriculture, bioenergy and industry. General characteristics and Evolutionary significance of prochlorophyceae,	12
Unit- IV	Virus: General properties; structure, purification, cultivation, principle of viral taxonomy, classification, one step growth experiment, Phage and its life cycle, RNA phages, DNA viruses, RNA viruses; virioids and prions; structure, transmission, and replication of plant virus (TMV) and animal viruses (HIV); Economic importance of virus	12
Total		48

Referred Text books:

1. Microbiology by Prescott, L. M., Harley, J. P. and Klen, D. A, Tata McGraw-Hill, New York.
2. Microbiology by Pelczar, Jr., M. J., Chan E.C.S. and Krieg, N. R, Tata McGraw-Hill, New Delhi.
3. General Microbiology by Stanier, R.Y., Ingraham, J.L., Wheelis, M.L., and Painter, P.R. The McMillan Press Ltd.
4. Brook Biology of Microorganisms by Madigan, M.T., Martinko, J.M. and Parker, J. Prentice-Hall.
5. Microbial Genetics by Maloy, S.R., Cronan, J.E.Jr., and Friefelder, D. Jones and Bartlett Publishers.
6. Phycology by R.E. Lee, Cambridge University Press (for Cyanobacteria)

Semester: I Course No: BOTA C102**Course Name: Lower Plant diversity and Paleobotany****Credits: 4****Core/Elective: Core****Course details**

Chapter	Contents	Hours
Unit- I	Algae: Distribution (terrestrial, freshwater, marine); thallus organization; cell structure; criteria for classification of algae; pigments, reserve food, flagella, reproduction (vegetative, asexual, sexual). Salient features of Glaucophyta, Rhodophyta, Euglenophyta, Phaeophyta Bacillariophyta, Xanthophyta, Chlorophyta and Charophyta; algal blooms and toxins; economic importance of algae; algae as biofertilizer, food, feed and uses in industry.	12
Unit- II	Fungi: General characters of fungi; recent trends in classification; phylogeny of fungi; cell ultra-structure, unicellular and multicellular organization; substrate relationship in fungi; nutrition, reproduction; heterothallism; heterokaryosis; parasexuality; general account of Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina, Deuteromycotina; Economic importance of Fungi i.e. medicine, food, industry, and disease, General account of lichen, Mycorrhizae and their economic importance.	12
Unit- III	Bryophyta: Classification; theories of origin (algal and pteridophytean), Phylogenetic relationships among Bryophytes; distribution, morphology, structure, reproduction and life history; general account of Marchantiales, Jungermaniales, Anthocerotales, Sphagnales, Funariales and Polytrichales; Ecological importance; Evolution of gametophytes and sporophytes in bryophytes. Pteridophyta: Morphology, anatomy and reproduction; classification; evolution of stele; heterospory and origin of seed habit. General account of Psilopsida, Lycopsida; Sphenopsida and Pteropsida.	12
Unit- IV	Gymnosperms: General characteristic features of Gymnosperms, Classification of Gymnosperms and their distribution in India. General account of Cycadales, Coniferales, Ephedrales, and Gnetales. Paleobotany: Geological time scale, origin and geological evidences; evolutionary time scale (eras, periods and epoch). Types of fossils, processes of fossilization, role of fossils in evolution. Brief account of fossil Pteridophytes and Gymnosperms. Cycadeoidales, Pentoxylales, Medullosales and Glosspteriodales.	12
Total		48

Referred Text books:

1. Phycology by R.E. Lee, Cambridge University Press
2. Algae by L.E. Graham and L. W. Wilcox Prentice Hall
3. Introductory Phycology by Kumar, H. D. (1988), East-West Press, New Delhi.
4. Bryophyta by B.R. Vasista, S. Chand Publication
5. Bryophyta by N. S, Parihar, Central Book Depot, Allahabad.
6. Gymnosperms by Bhatnagar, S. P. and Moitra, A., New Age International, New Delhi.
7. Biology and Morphology of Pteridophytes by Parihar, N. S., Central Book Depot, Allahabad.

8. Gymnosperms: Structure and Evolution by Chamberlin, C. J., Dover Publications, New York.
9. Introductory Mycology by Alexopoulos, C. J., Mims, C. W. and Blackwell, M., John Wiley, New York.
10. An Introduction to Mycology by Mehrotra, R. S. and Aneja, R. S., New Age International, New Delhi.

Semester: I Course No: BOTA C103

Course Name: Cell Biology and Evolution

Credits: 4

Core/Elective: Core

Course details

Chapter	Contents	Hours
Unit- I	Structural organization of the plant cell and their function: Structure and functions of cell wall, plasma membrane, ion carriers, channels and pumps, receptors, chloroplast, mitochondria, peroxisome, endoplasmic reticulum, ribosome, lysosome, vacuole, nuclear pore and nucleolus. Cell shape and motility: cytoskeleton organization, role of microtubules and microfilaments in flagella and other moments.	12
Unit- II	Cell cycle: Mitosis, meiosis, DNA synthesis in cell cycle, regulation of cell cycle: role of cyclins and cyclin-dependent kinases; cytokinesis and cell plate formation; cell surface receptors, G-protein coupled receptors, signal transduction pathways, secondary messengers, regulation of signaling pathways.	12
Unit- III	Structure and organization of eukaryotic chromosomes: Chromatin - heterochromatin and euchromatin, special types of chromosomes, chromosome morphology, karyotype, chromosome banding, sex chromosomes, sex determination in plants, dosage compensation, B-chromosomes, Chromosome organization, DNA packing, Nucleosome, Nuclear DNA content, C-value paradox, satellite-DNA, cot-curve, unique and repetitive DNA, Junk DNA and ENCODE project, <i>In situ</i> hybridization concept and techniques, FISH and GISH.	12
Unit- IV	Evolution: Lamarckism; Darwinism-concepts of variation, adaptation, struggle, fitness and natural selection. Neo-Darwinism, synthetic theory of evolution, genetic polymorphism, gene pool, gene frequency; Hardy-Weinberg Law, Origin of new genes and proteins; molecular evolution, epigenetics and adaptive evolution.	12
Total		48

Referred Text books:

1. Cell Biology by De-Robertis Saunders, Singapore.
2. Reproduction in eukaryotic cells, Prescott DM, Academic Press.
3. Developmental Biology, Gilbert SF, Sinauer Assoc. Inc.
4. Cell in Development and Inheritance, Wilson EB, McMillan, New York.
5. Molecular Biology of Cells, Alberts B et al.
6. Molecular Cell Biology, Lodisch et al.
7. Molecular Biology of steroid and Nuclear Hormone Receptor, Freedman LP, Birkhauser, Basel.
8. Buchanan, B. B., Grisse, W. and Jones, R. L. J., (2000). Biochemistry and molecular biology of plants. American Society of plant physiologists, Rockville, USA
9. The Cell: A molecular approach by Cooper G. M., ASM Press, Washington, D. C., USA.
10. Essentials of Molecular Biology by Malacinski, G. M and Feidfelder, D Ed. Jones and Bartel, London.
11. Gene IX or X by Lewine, B. Person-Prentice Hall, London.

Semester: I, Course No: BOTA C104**Course Name: Genetics and Molecular Biology****Credits: 4****Core/Elective: Core****Course details**

Chapter	Contents	Hours
Unit- I	Genetics: Mendelism and deviation of Mendelian ratios, epistasis, linkage and crossing over, sex-linked inheritance, three point test cross and chromosome mapping, Extra chromosomal inheritance, mitochondrial and chloroplast genome.	12
Unit- II	Cytogenetics: Structural chromosome aberrations: duplication, deficiency, inversion and translocations heterozygotes; Numerical chromosome aberrations: aneuploids: trisomics and monosomics; euploids: autopolyploids, allopolyploids, segmental allopolyploid, role polyploidy in speciation with reference to <i>Triticum</i> and <i>Brassica</i> .	12
Unit- III	Molecular genetics: Prokaryotic and eukaryotic DNA replication: DNA polymerases, replisome, replicon, primase, telomerase. RNA transcription: mRNA, tRNA, rRNA, siRNA, miRNA, RNAi, RNA polymerases, RNA-processing: RNA splicing, spliceosome, RNA editing. Deciphering genetic code. Protein translation, post-translational modifications, protein targeting. Regulation of gene expression in prokaryotes and eukaryotes; Fine structure of gene, cis-trans test.	12
Unit- IV	Mutagenesis, DNA damage and repair: Spontaneous and induced mutations, physical and chemical mutagens, molecular basis of mutations, transposable elements in prokaryotes and eukaryotes, mutations induced by transposons, site directed mutagenesis, DNA damage and repair mechanisms. Environmental mutagenesis and genetic toxicology	12
Total		48

Referred Text books:

1. Genetics: A Conceptual Approach by Pierce, B. A., W. H. Freeman, New York.
2. Principles of Genetics by Simmons, M.J., Snustad, D.P., Tamarin, R.H.
3. Molecular Biology of the Gene by J.D. Watson, N.H. Hopkins, J.W. Roberts, J.A. Steitz and A.M. Weiner, the Benjamin / Cummings Pub. Co. Inc., California.
4. Genomes by T.A. Brown.
5. Molecular Cell Biology by J. Darnell, H. Lodish and D. Baltimore, Scientific American Books Inc USA 1994.
6. Gene IX by Benjamin Lewin, Oxford University Press, U.K.
7. Molecular Biology of the Cell by B. Alberts, D. Bray, J. Lewis, M. Raff. K. Roberts, and J.D. Watson, Garland Publishing Inc., New York.
8. The Cell: A molecular approach by Cooper G. M., ASM Press, Washington, D. C., USA.

Semester: I, Course No: BOTA P105**Course Name: Practical****Credits: 4****Core/Elective: Core****Course details**

Chapter	Contents	Hours
Microbiology	1. Laboratory Protocol, general rules and regulations for laboratory safety. 2. Bacterial staining (simple staining, negative staining, Gram staining and acid-fast staining, spore and capsule staining) 3. Microbial pure culture techniques (Streak plate methods, Pour plate methods); sub-culturing techniques.	100

Lower plant diversity	4. Microscopic measurement of microorganisms (Micrometry). 5. Measurements cultural characteristics of microorganisms. 6. Measurement growth microorganism (microbial cells counting, CFU counting, spectrophotometric/colorimetric analysis etc.) 7. Collection, microscopic identification cyanobacteria, micro and macro algae, preparation permanent slides of caynobacteria, microalgae. Preservation, and preparation of herbarium macroalgae.	
Cell biology	8. Study of morphology and reproductive structures of fungi belonging to different classes through permanent microscopic preparations and preserved specimens. 9. Study of temporary & permanent preparation for microscope observation of external and internal features of vegetative and reproductive structure of important genera of Bryophytes. 10. Study of temporary and permanent preparation of vegetative and reproductive structure of Pteridophytes. 11. Study of temporary and permanent preparation of vegetative and reproductive structure of Gymnosperms and Fossils.	
Genetics and Molecular Biology	12. Squashing techniques for study of mitosis and meiosis in onion root tip and flower bud; Microscopic analysis of different stage cell division and microphotography. 13. Mitotic index of dividing cells of <i>Allium cepa</i> root tips. 14. Comparative karyotypic analysis of two species of a genus. 15. Isolation of plant DNA and quantification of extracted DNA by spectrophotometric method 16. Chromosome mapping through two and three point test cross	
Total		100

Referred books/manual/Monographs

1. Microbiology A Laboratory Manual by Cappuccion, J.G., and Sherman, N., Addison Wesley
2. Microbiological Applications (A Laboratory Manual in General Microbiology) by Benson, H.J., W.C.B., Wim C. Brown Publishers
3. Practical Botany, Vol. 2 by S.C. Santra, NCBA publication
4. Handbook of Microbial Technology by Yadav, A.K. and Mowade, S.M.
5. Methods in Plant ecology by S.B. Chapman, Wile and son publications
6. Algal culture techniques by Andersen
7. Manuals of Phycology by Smith

SEMESTER: II

Semester: II, Course No: BOTA C201

Course Name: Systematics of Angiosperms

Credits: 4

Core/Elective: Core

Course details

Chapter	Contents	Hours
Unit- I	Taxonomic Structure: Taxonomic hierarchy; Concept of species, genus and family, Plant Nomenclature: Salient features of International Code of Nomenclature (ICN) for Algae, Fungi and Plants: priority, effective and valid publications and author citation. Type concept, Taxonomic Tools: Field and Herbarium techniques; Floras and Botanic Gardens, Computer and Taxonomy.	12
Unit- II	Systems of Angiosperm Classification: Artificial, natural and phylogenetic systems, relative merits and demerits of major systems of	12

	classification (Bentham and Hooker, Engler and Prantle, Hutchinson and Takhtajan). Angiosperm Phylogeny groups (APG)	
Unit- III	Angiosperm Families: Floral structure and phylogenetic relationship among the taxa under the following orders: Liliflorales, Scitaminae, Orchidales, Ranales, Rosales, Tubiflorae, Malvales, Asterales and Rubiales.	12
Unit- IV	Taxonomic Evidences: Morphology, anatomy, palynology, embryology, cytology, phytochemistry and serology. Phylogenetic tree and Cladistics	12
Total		48

Referred Text books:

1. Principles of Angiosperms Taxonomy by Davis, P. H. and Heywood, V. H., Robert E. Kreiger, New York.
2. Current Concepts in Plant Taxonomy by Heywood, V. H. and Moore, D. M., Academic press, London.
3. Principles and Methods Plant Biosystematics by Solbrig, O. T., MacMillan, London.
4. Plant taxonomy and Biosystematics by Stace, C. A., Edward Arnold, London.
5. Diversity and Classification of Flowering Plants by Takhtajan, A. L. Columbia University Press, NY.
6. Contemporary Plant Systematics by Woodland, D. W. Prentice-Hall, New Jersey, USA

Semester: II, Course No: BOTA C202**Course Name: Plant Physiology and Metabolism****Credits: 4****Core/Elective: Core****Course details**

Chapter	Contents	Hours
Unit- I	Membrane transport and translocation of water and solutes: Plant water relation, mechanism of water transport through xylem, phloem loading and unloading, passive and active solute transport, membrane transport proteins. Photosynthesis: Light harvesting complex, structure and chemistry, Photolysis of water and Hill Reaction, Photo-phosphorylation, CO ₂ -fixation, C ₃ and C ₄ and CAM pathways, photorespiration.	12
Unit- II	Respiration: Glycolysis, Fermentation, TCA cycle, pentose phosphate pathways, mitochondrial electron transport and ATP synthesis, alternate oxidase, Glyoxylate Cycle. Lipid metabolism: fatty acid biosynthesis, synthesis of membrane lipids, storage lipids and their catabolism.	12
Unit- III	Nitrogen metabolism: Biological nitrogen fixation, asymbiotic and symbiotic nitrogen fixation, nodule formation, nod and <i>nif</i> genes, their regulation and function, mechanism of nitrate uptake and reduction, ammonium transport and assimilation. Sensory Biology: Structure, function and mechanisms of action of phytochromes, cryptochromes and phototropins, stomatal physiology; Phytohormones: Plant growth regulators, structure and function, ethylene, abscisic acid, brassinosteroids, polyamines, jasmonic acid.	12
Unit- IV	Stress Physiology: Plant responses to biotic and abiotic stress, mechanisms of biotic and abiotic stress tolerance, water deficit and drought resistance, salinity stress, metal toxicity, freezing and heat stress, oxidative stress. Oxidative metabolism: reactive oxygen species (ROS), antioxidants, antioxidant enzymes: catalase, peroxidases, superoxide dismutase, glutathione transferase, glutathione reductase, <i>Halliwell-Asada cycle</i> .	12

	Physiology of aging and senescence, influence of hormones and environmental factors on senescence. Programmed cell death.	
Total		50

Referred Text books:

1. Plant Physiology by Taiz & Zeiger, Sinauer Publications
2. Biochemistry and Molecular Biology of Plants by Buchachnanan, B. B., Grisse, W. and Jones, R. L. J., American Society of Plant Physiologists, Rockville, USA.
3. Plant Physiology by Devlin, R. N. and Witham, F. H., CBS Publishers, Delhi.
4. Plant Physiology by Salisbury, F. B. and Ross, C. W., Wordworth Publication California, USA

Semester: II, Course No: BOTA C203

Course Name: Biochemistry and Biostatistics

Credits: 4

Core/Elective: Core

Course details

Chapter	Contents	Hours
Unit- I	Basics of Biochemistry: Structure of atoms, molecules, chemical bonds, stabilizing interactions (Van der Waals, electrostatic, hydrogen bonding and hydrophobic interactions). Principle of biophysical chemistry and bioenergetics: pH, buffer, reaction kinetics, thermodynamics, colligative properties, couples reactions, group transfer, biological energy transfer.	12
Unit- II	Biomolecules: Composition, structure, and function of biomolecules (carbohydrates, lipids, proteins, nucleic acids and vitamins). Confirmation and stability of protein (Ramachandra plot, secondary, tertiary and quaternary structure; domains, motif, and fold). Confirmation and stability of nucleic acids (A-, B-, Z- DNA, RNA); phenols and terpenes.	12
Unit- III	Plant enzymes and coenzymes: Nomenclature and classification of enzymes and coenzymes: Distribution of enzymes in plant, structure and function of Isozymes. Enzyme kinetics, mechanism of enzyme action and its regulation. Factors affecting enzyme action. Antioxidants: Structure and functions of ascorbic acid, glutathione, tocopherol, carotenoids etc.	12
Unit- IV	Biostatistics: Frequency distribution, cumulative and relative frequency. Measurement of central tendency and dispersion, mean, median and mode, mean deviations, variance and standard deviation, coefficient of variation, errors. Analysis of variance (ANOVA). Comparison of means: Students 't' test and paired 't' test. Chi-square (X ²) test, 2 x 2 contingency table and association analysis as applied to biological experimental data. Simple correlation and linear regression analysis.	12
Total		48

Referred Text books:

1. Lehninger Principle of Biochemistry by Nelson and Cox
2. Advanced Biochemistry by Voet and Voet
3. Principle of Biochemistry by Stryer

4. Biochemistry by Mathews, C. K., Van Holde, K. E. and Ahern, K. G., Addison-Wesley Publishing Company, San Francisco, USA.
5. Genes VH, B. Lewin, Oxford University Press.
6. Proteins – Structure and Molecular Properties, TE Creighton, WH Freeman and Company.
7. Introduction to Protein Structure, C. Branden and J. Tooze, Garland Publishing, New
8. Fundamentals of Biostatistics by Veer Bala Rastogi
9. Fundamentals of Biostatistics by Bernard Roser

Semester: II Course No: BOTA C204

Course Name: Ecology and Environment

Credits: 4

Core/Elective: Core

Course details

Chapter	Contents	Hours
Unit- I	Ecosystem organization & function: Biotic and abiotic components, trophic level, food chain, food web, Aquatic ecosystems, Marine ecosystems, Wetland ecosystems, Grassland ecosystems, Forest ecosystems. Ecological adaptations, Energy flow in the ecosystem, primary production (methods of measurement), decomposition, energy dynamics, ecological efficiencies, concept of energy subsidy, universal energy flow, The Gaia hypothesis, Biogeochemical cycle.	14
Unit- II	Population ecology: Population interactions (population density, natality, mortality, population age structure, carrying capacity, Community ecology: Ecological communities and ecosystems, structural analysis of communities, inter- and intra-specific competitions, Mutualism and commensalism, predation, parasitism, amensalism, competition and coexistence, Habitat and ecological niche.	12
Unit- III	Ecological regulation: System studies, Chemical transformations, Biochemical transformations, ecological succession, Mechanism of ecological succession and characters of succession.	10
Unit- IV	Environmental Pollution: Concept of pollution, air pollution, water pollution, terrestrial/soil pollution, noise pollution, and radiation pollution. Source of pollutants: natural and anthropogenic pollutants; Global warming and climate change; Greenhouse gases (GHG), Ozone layer depletion, consequences of climate change: smog, acid rain etc. Environmental Pollution and Legislative solution: Pollution Control Board; natural and men made disasters and disaster management; Environmental education and awareness, environmental audit, environmental management, environmental crisis, environmental ethics.	14
Total		50

Referred Text books:

1. Concepts of Ecology by Kormondy, E. J., Prentice-Hall India, New Delhi.
2. Fundamentals of Ecology by Odum, E. P. Saundas, Philadelphia, USA.
3. Ecology and Field Biology by Smith, R. L. Harper Collins, New York.
4. Ecology by Subrahmanyam, N. S. and Sambamurty, A. V. S. S. New Delhi

Semester: II Course No: BOTA P205**Course Name: Practical****Credits: 4****Core/Elective: Core****Course details**

Chapter	Contents	Hours
Plant Systematics	1. Description and identification of Angiosperms at family, genus and species levels using Floras.	100
Plant Physiology Biochemistry	2. Herbarium techniques.	
	3. Determination of Transpiration and Absorption ratios.	
	4. Measurement of rate of photosynthesis	
	5. Preparation of Buffers.	
	6. Quantitative estimation of Protein (Lowry methods/Bradford Method), Sugars (Anthrone Methods), Lipids (Bligh and Dryer Method).	
Ecology and Environment	7. Quantitative estimation of Amino acids (Ninhydrine methods)	
	8. Spectrophotometric analysis of different enzymes (CAT, APX, GR, SOD)	
	9. Estimation of pigments (chlorophylls and carotenoids) from plant and algal materials.	
	10. Estimation Dissolved oxygen (DO) water samples by Winkler's method	
	11. Physico-chemical analysis of water and soil (pH, chloride, phosphate, nitrogen, potassium)	
	12. Determination of primary productivity of water samples.	
	13. Determination of minimum size and number of quadrants required for reliable estimates of biomass in grassland	
Biostatistics	14. Determination of frequency, density of a species of a grassland community.	
	15. Calculation of Important Value Index (IVI) of grassland ecosystem.	
	16. Measurement of Central Tendency	
	17. Measurement of dispersion	
	18. Students's T test	
	19. X ² (chi-square) distribution	
Total		100

Referred practical books/manuals

- Biochemical Methods by Pingoud, Urbanke, Hoggett and Jeltsch, Willey-VCH
- Experimental biochemistry by Switze, R.L. and Garrity, L.F., Freeman and Company, New York
- Analytical Biochemistry and separation Techniques by Palanivelu, P
- Biochemical calculations, by Segel
- Phytochemicals Techniques by N. Raaman
- Phytochemicals methods by Harborne, J.G, Springer

Semester: II, Course No: BOTA VAC206**Add on Course Name: Organic Farming****Credits: NC****Core/Elective: Non Credit****Course details**

Chapter	Contents	Hours
Unit- I	Introduction to Organic Farming: Introduction; Need of Organic Farming; Benefits of Organic Farming; Social aspects of Organic Farming; Market aspects of Organic Farming	08

Unit- II	Organic Fertilizers: Need of Organic Fertilizer; Benefits of Organic Fertilizer; Preparation of Organic Fertilizer; Demonstration & land preparation. Plant Nutrients: Name of plant Nutrients; Functions of Nutrients in plant growth and Development Sources of nutrients for Organic Agriculture: Organic Manure: Rural compost, City compost, Oil cakes, Animal wastes, Green Manure with Leguminous crops in crop rotation. In-situ incorporation of crop residues	08
Unit- III	Bio fertilizers and their method of use: Need and Benefits of Microorganism, Management of Microorganism, mechanism of action in increasing soil fertility Preparation of vermin compost: Pit construction; Raw materials; Availability of specific species of earth worm; Method of preparation; Quality improvement of finished vermicompost	08
Unit- IV	Plant Protection Measures: Integrated pest & disease management techniques, Organic pesticides, bio-pesticides. Inorganic pesticides, disadvantages of their use. Seed, seedling and soil Treatment measures. Feasibility of complete dependence on organic sources. Good Harvesting Practices; Storage; Transportation; Supply Chain.	08
Total		32

Referred Text books:

1. Basics of Organic Farming by Bansal and Mamta, CBS publication
2. A text book of Modern Organic Farming
3. Principles of Organic Farming: Textbook (By P. L. Maliwal)

SEMESTER: III**Semester: III, Course No: BOTA C301****Course Name: Plant Embryology and Anatomy****Credits: 4****Core/Elective: Elective**

Chapter	Contents	Hours
Unit- I	Male and female gametophyte: Structure of anthers, microsporogenesis, role of tapetum, pollen development and gene expression; male sterility, sperm dimorphism and hybrid seed production, pollen germination, pollen tube growth and guidance, pollen storage, pollen allergy, pollen embryos. Female gametophyte: Ovule development, megasporogenesis; organization of the embryo sac, structure of the embryo sac cell.	12
Unit- II	Pollination, Pollen-pistil interaction and fertilization: Floral characteristics, pollination mechanisms and vectors, breeding system; commercial considerations, structure of the pistil, pollen stigma interactions, sporophytic and gametophytic self-incompatibility (cytological, biochemical and molecular aspects), double fertilization, <i>in vitro</i> fertilization.	12
Unit- III	Seed development and fruit ripening: Endosperm development during early, maturation and desiccation stages, embryogenesis, ultra-structure; cell lineages during late embryo development; storage proteins of endosperm and embryo; polyembryony, apomixis; embryo culture, dynamics of fruit growth and ripening; Latent life-dormancy; Importance and types of dormancy, seed dormancy, overcoming seed dormancy, bud dormancy.	12

Unit- IV	Plant Anatomy: Tissue and tissue system; Meristematic tissue, distribution of mechanical tissues, apical meristem, Root-shoot transition, shoot-root development, leaf development and phyllotaxy, transition to flowering. Nature and need of secondary growth, Normal secondary growth in dicot stem, Anomalous secondary growth in dicot and monocot stem (adaptive and non-adaptive),	12
Total		48

Course details

Referred Text books:

1. Seed: physiology of Development and Germination by Bewley, J. D. and Black, M. Plenum, New York.
2. The Embryology of Angiosperms by Bhojwani, S. S. and Bhatnagar, S. P., Vikas Publishing House, New Delhi.
3. Molecular Embryology of Flowering Plant by Raghavan, V. Cambridge University Press, Cambridge.
4. Developmental Biology of Flowering Plants by Raghavan, V., Springer-Verlag, New York.
5. Plant Anatomy by B.P. Pandey. S. Chand & Co. Ltd.
6. Anatomy of Angiosperms by B.K. Mishra and N. Dash, Kalyani Publishers.

Semester: III, Course No: BOTA E302(A)

Course Name: Molecular Plant Pathology and Immunology

Credits: 4

Core/Elective: Elective

Chapter	Contents	Hours
Unit- I	Phytopathology: Plant disease symptoms, modes of infection and dissemination; altered metabolism of plants under biotic and abiotic stresses; host-parasite relationship, disease triangle, disease cycle and stages of disease development, molecular mechanism of pathogenesis, recognition phenomenon, penetration and invasion.	12
Unit- II	Host resistance: Primary disease determinant; enzymes and toxins in relation to plant diseases; host defense mechanism, molecular mechanism of resistance; phytoalexins, PR proteins, antiviral proteins, SAR, HR and active oxygen radicals	12
Unit- III	Immune system: Innate and adaptive immune system Cells and molecules involved in innate and adaptive immunity, antigens, antigenicity and immunogenicity. B and T cell epitopes, structure and function of antibody molecules, generation of antibody diversity, monoclonal antibodies, antibody engineering, antigen-antibody interactions	12
Unit- IV	Immune response: MHC molecules, antigen processing and presentation, activation and differentiation of B and T cells, B and T cell receptors, humoral and cell-mediated immune responses, primary and secondary immune modulation, complement system.	12
Total		48

Course details

Referred Text books:

1. Plant Pathology by Mehrotra, R. S. and Aggarwal, A., Mc Graw Hill Education.
2. Kuby Immunology, 4th edition, R.A. Goldsby, Thomas J. Kindt, Barbara A. Osborne (Freeman).
3. Immunology, A Short Course, 4th Edition, Eli Benjamin, Richard Coico, Geoffrey
4. Sunshine (Wiley-Liss).

5. Fundamentals of Immunology, William Paul.
6. Ivan Roitt: Roitt's Essentials of Immunology

Semester: II, Course No: BOTA E302(B)

Course Name: Natural Resources and Utilization

Credits: 4

Core/Elective: Core

Course details

Chapter	Contents	Hours
Unit- I	Introduction to Natural Resources: Concept of natural resources, types and classification. Factors causing resource accessibility, statistical distribution and function. Ecological, social and economic dimension of resource management.	12
Unit- II	Natural resources and management: Conservation of natural resources, Non-renewable energy resources, Alternative sources of energy, new concepts for alternative energy. Renewable energy resources: Water resources, soil resources, Soil conservation and management. Water resources and conservation: rain water harvesting, water shed management, uses of water, Forest as a renewable resource, deforestation, afforestation, conservation, social forestry, wild-life conservation	12
Unit- III	World centre of primary diversity of domesticated plants: Basic concepts, origin of agriculture and plant introduction. Origin, evolution, botany, cultivation and uses of (i) Food crops, (ii) fibre crops, (iii) medicinal and aromatic plants, and (iv) vegetable and oil-yielding crops with special reference to local plants. Plants, plant parts and plant products used in homeopathy medicines, Plants, plant parts and plant products used in ayurvedic medicines, Important timber-yielding plants, Important poisonous plants of India. Concept of phytogeography: Climate and Vegetation pattern of the World; Endemism, Floristic regions of India; vegetational pattern of India.	14
Unit- IV	In situ conservation: International efforts and Indian initiatives; protected areas in India – Sanctuaries, national parks, biosphere reserves, wetlands and mangroves for conservation of wild biodiversity. Ex situ conservation: Principles and practices; botanical gardens, field gene banks, seed banks, cryobanks, general account of the activities of Botanical Survey of India (BSI), National Bureau of Plant Genetic Resources (NBPGR). Principles of conservation; extinction; environmental status of plants based on IUCN (Now World Conservation Union). Salient features of Biodiversity Act and rules.	12
Total		48

Referred Text books:

1. An Advance Text book and Biodiversity: Principles and Practice by K.V. Krishnamurthy, Oxford & IBH publication, New Delhi.
2. Plants, Genes and Agriculture by Conway, G. and Barbier, E., Jones and Bartlett, Boston, USA.
3. Tropical Botanical Gardens Their role in Conservation and Development by Heywood, V. H. and Wyse Jackson, P. S., Academic press, San Diego, USA.
4. Understanding Biodiversity: Life sustainability and Equity by Kothari, A, Orient Longman, New York.
5. Biodiversity and its Conservation in India by Negi, S. S. Indus Publishing Company, New Delhi.
6. Evolution of Crop Plants by Simmonds, N. W., Longman, New York.

Semester: IV, Course No: BOTA E303(A)**Course Name: Bioinformatics and Biostatistics****Credits: 4****Core/Elective: Elective****Course details**

Chapter	Contents	Hours
Unit- I	Introductory Bioinformatics: Introduction to Bioinformatics, Introduction to data structures and database concepts, Biological sequence analysis and information retrieval, pair wise and multiple sequence alignment: BLAST, FASTA, Phylogenetic analysis.	12
Unit- II	Basics of Molecular Modelling: Introduction to Molecular Modelling and its applications. Biomolecular modelling problems: protein folding, protein misfolding. Basic concepts of quantum mechanics, <i>ab initio</i> structure prediction. Molecular mechanisms, energy calculations, Bond stretch, Angle bending, torsional terms, Electrostatic interaction- van der Waals interactions. Molecular modeling in drug discovery.	12
Unit- III	Structure Based Drug Designing: Structure based drug designing: 3D pharmacophores, molecular docking, De novo Ligand design, 3D data base searching and virtual screening, Mechanism of drug absorption, distribution, metabolism and excretion: ADME process; Drug toxicity evaluation, Pharmacokinetics.	12
Unit- IV	Molecular Dynamics and Simulations: Introduction to molecular dynamics and simulations; Monte-carlo simulation of biomolecules. Comparative modelling of protein: by homology modelling, validation of protein models –Ramachandran plot, threading and <i>ab initio</i> modelling.	12
Total		48

Referred Text books:

1. Molecular Modelling: Principles & Applications. By Andrew R. Leach, Pearson (Prentice Hall) 2nd Edition 2001.
2. Bioinformatics: A practical guide to the analysis of genes and proteins. By AD Baxevanis and BFF Ouellette (Wiley-Liss) 3rd Edition 2005.
3. Guidebook on Molecular Modeling in Drug Design- N. Claude Cohen, 1996. Elsevier
4. Molecular Modeling Basics- Jan H. Jensen, 2010. CRC Press.
5. Computational Chemistry and Molecular Modeling, Principles and Applications- K. I. Ramachandran, G. Deepa, K. Namboori, 2008
6. Textbook of Drug Design and Discovery, 5th Edition- Kristian Stromgaard, Povl Krogsgaard-Larsen, Ulf Madsen, 2016. CRC Press.

Semester: IV, Course No: BOTA E303(B)**Course Name: Environmental Biotechnology and Waste management****Credits: 4****Core/Elective: Elective****Course details**

Chapter	Contents	Hours
Unit- I	Aquatic toxicity assessment: concept of toxicity; mechanism of toxicant action; dose, effect and response; analysis of response curves; statistical doses of toxicants; Selection of test batteries, media, apparatus and facilities, liquid media and sediment toxicity assessment, microtox acute toxicity test.	12
Unit- II	Bioaccumulation: Concept and measurement, food chain and lipophilicity approach, quantitative structure activity relationship, kinetics of uptake and retention, factors affecting bioaccumulation. Bioaccumulation of metals: metal accumulation by flora and fauna; biosorption, phytofiltration, phytochelation and phytoextraction; role of metalphores	12

Unit- III	Biodegradation of organic pollutants: Microbial processes for degradation; measurement of biodegradability; aerobic and anaerobic degradation of carbohydrates, proteins and lipids, aliphatic hydrocarbons, aromatic hydrocarbons, degradation of halogenated organics, co-metabolic degradation, degradative capacity of fungi	12
Unit- IV	Fate of pesticides in the environment: Fundamental reaction of pesticide metabolism; microbial transformation of pesticides-oxidations, decarboxylation, dealkylation, halogen reaction, aromatic ring cleavage, hydrolysis and nitrate reduction, waste management.	12
Total		48

Referred Text books:

1. Ecology and Field Biology by Smith, R. L. Harper Collins, New York.
2. Ecology by Subrahmanyam, N. S. and Sambamurty, A. V. S. S. New Delhi

1.

Semester: III, Course No: BOTA CT300**Course Name: Economic Botany****Credits: 4****Core/Elective: Interdisciplinary**

Course details		
Chapter	Contents	Hours
Unit- I	Origin, history, domestication, botany, cultivation, production and use of: Cereals: Wheat, rice, maize, sorghum, pearl millet and minor millets. Pulses: Pigeon pea, chickpea, black gram, green gram, cowpea, soyabean, pea, lentil, horsegram, lab-lab bean.	12
Unit- II	Origin, distribution, cultivation, production and utilization of economic plants of following groups such as Plant of agro-forestry importance: Teak, Sal Acacia, Sesbania, Neem etc. Fibres: cotton, silk cotton, jute, sunnhemp. Oilseeds: Groundnut, sesame, castor, rape seed, mustard, sunflower, safflower, niger, oil palm, coconut and linseed.	12
Unit- III	Origin, distribution, classification, production and utilization of Fruits: mango, banana, citrus, guava, grapes and other indigenous fruits; apple, plum, pear, peach, cashewnut and walnut; Vegetables: tomato, brinjal, okra, cucumber, cole crops, gourds etc.	12
Unit- IV	Important medicinal and aromatic plants: Sarpagandha, Belladonna, Cinchona, Nux-Vomica, Vinca, Mentha and Glycirriza, Plantago etc.; Narcotics: Cannabis, Datura, Gloriosa, Pyrethrum and opium. Important Spices and condiments Ginger, Garlic, Cinnamon, Cardamom, Cumin, Foeniculum etc.	12
Total		48

Referred Text books:

1. Economic Botany by B.P. Pandey. S. Chand & Co. Ltd.
2. Economic Botany: S. L. Kochhar, Cambridge University Press
3. Economic Botany- Principle & Practices: G.E. Wickens, Kluwer Academic Publishers
4. Economic Botany & Ethnobotany: AfroZalam, Willey

Semester: III, Course No: BOTA P304**Course Name: Practical****Credits: 4****Core/Elective: Core****Course details**

Chapter	Contents	Hours
Plant Embryology and Anatomy	<ol style="list-style-type: none"> 1. Microscopic observation various microsporangium (T.S & L.S.), Microspore tetrad, Pollen structure 2. Pollen counting and viability; staining of pollen tube 3. Microscopic study of ovules (T.S. & L.S.), Ovaries (T.S. & L.S.), structure of embryo sac organisation, types of endosperm etc. 4. Microscopic observation of Primary and Secretory tissue systems, Ecological anatomy, wood anatomy, preparation of permanent slides. 5. Colorimetry & Spectrophotometry 6. Determination of Absorption maxima of Dyes and verification of Beer-lambert's Law. 7. Centrifugation 8. Pair wise and multiple sequence alignment by using EMBL-EBI and/or ClustalW2 tools. 9. Phylogenetic analysis of proteins and genes using PHYLIP and /or Phylogenetic analysis using parsimony (PAUP) or any other analytical tools. 10. Protein Structure visualization and Homology modelling of proteins through PyMol, VMD and Swiss-PDBV. 11. Docking of small molecules to protein binding sites by AutoDock-Vina and MGL Tools or protein-protein docking through online modes. 12. Protein structure predictions via online servers like I-TASSER, Phyre2, QUARK, PredictProtein. 13. Molecular Dynamics simulation of small protein and water complex by AMBER/GROMACS. 14. ELISA for quantitative detection of plant pathogen 15. Immunodiagnosics (demonstration using commercial kits). 16. Preparation of a short list of ten most important sources of firewood and timber of the locality. Give their local names, scientific names and families to which they belong. Mention their characters. 17. Study of biodiversity and important flora of Odisha and India through field trips. 	100
Bioinformatics		
Natural Resources		
Total		100

Referred practical books/ manuals/monographs

1. A Practical Guide for Basic Bioinformatics and Biostatistics by Pallavi Pandey & Pooja Tiwari. Notion Press; First edition (2017), ISBN- 13: 978-1946822260.
2. Introductory Practical Biostatistics by Misra, B.N. and M.K. Misra
3. Practical Biochemistry: Principles and Techniques by Wilson and Walker
4. Plant reproduction by T. Pullaiah, K. Lakshminarayana, B. Hanumanta Rao
5. Udbhida Sangraha (In Odia) by M.K. Misra
6. Flora of Odisha by Saxena, H.o & M. Brahmam

Semester: III, Course No: BOTA VAC305**Add on Course Name: Nursery and Horticulture Techniques****Credits: NC****Core/Elective: Non Credit****Course details**

Chapter	Contents	Hours
Unit- I	Introduction to Nursery: Plant nursery: Definition, importance; Basic facilities for a nursery; layout and components of a good nursery. Nursery beds, types, their merits and demerits; precautions to be taken during preparation. Brief account of growing media; nursery tools and implements. Containers for plant nursery, Brief account of plant propagation structures.	08
Unit- II	Introduction to Horticulture: Horticulture: Definition, importance of horticulture in terms of economy, production, employment generation, environmental protection and human resource development. Fruit and vegetable zones of India and Odisha. Export scenario and scope for Horticulture in India. Classification of horticultural crops based on soil and climatic requirements	08
Unit- III	Introduction to Vegetable crops: Importance of vegetable cultivation in India and Odisha. Classification and Nutritive value of vegetables Importance, morphology and taxonomy, varieties, climate and soil, seeds and sowing, manuring, irrigation, intercultural operations, diseases and their control, harvesting and yield of following crops: Cultivation of (a) Brinjal (b) Tomato (c) Capsicum (d) Spinach (e) Coriander and (f) Mentha	08
Unit- IV	Introduction to Fruit crops: Importance of fruit growing in India and Odisha. Nutritive value of fruits. Origin, history, distribution, area and production, uses and composition, varieties, soil and climatic requirements, propagation, planting, training and pruning, manuring and fertilizer application, irrigation, intercropping, harvesting and yield, diseases and pests of the following tropical fruit crops: (a) Mango (b) Guava and (c) Papaya	08
Total		32

Referred Text books:

1. Nursery Management of Fruit Crops in India
2. Plant Propagation and Nursery Management

SEMESTER: IV**Semester: IV, Course No: BOTA C401****Course Name: Advanced Plant Biotechnology****Credits: 4****Core/Elective: Elective****Course details**

Chapter	Contents	Hours
Unit- I	Plant nutrition, plant cell and tissue culture: General introduction, history, scope, concept of cellular differentiation, totipotency. Plant micro and macronutrients, vitamins and growth hormones (auxins, gibberellins,	12

	cytokinins): physiological effects and mechanism of action, Media for plant tissue culture. Fundamental aspects of morphogenesis, micropropagation techniques, organogenesis somatic embryogenesis, androgenesis, gynogenesis and adaptive embryogenesis.	
Unit- II	Protoplasm culture: Somatic hybridization, protoplast isolation, fusion and culture, hybrid selection and regeneration. Possibilities, achievements and limitations of protoplasm research. Applications of plant tissue culture: clonal propagation, artificial seed production of hybrids, somaclones, production of secondary metabolites/natural products, cryopreservation and germplasm storage.	12
Unit- III	Plant genomics: Introduction to plant genomics, functional genomics, transcriptomics and proteomics, comparative genomics, organelle genomes (Mitochondria and Chloroplast). Studying genomes: shotgun approach, clone contig approach, chromosome walking and jumping, c-DNA, genome and gene libraries. Analysis of genome through application of DNA fingerprinting techniques: RFLP, RAPD, AFLP, SSR, SNP, DNA micro array. Expressed sequence tags (ESTs).	12
Unit- IV	Recombinant DNA, Transgenic and genome editing technologies: Methods of r-DNA technology and genetic manipulation; restriction endonucleases, vectors: plasmid, cosmid, BAC, YAC, <i>Agrobacterium</i> - the natural genetic engineer of Ti and Ri plasmid, mechanism T-DNA transfer to plant; Insect-, pathogen- and herbicide-resistant plants, stress tolerant plant; Genome and gene editing (CRISPR Cas-9) technologies for plant improvement. Regulatory, biosafety and ethical issues relating to transgenic and gene-editing.	12
Total		48

Referred Text books:

1. Molecular Biotechnology: Principles and Applications of Recombinant DNA by Glick, B. R. and Pasternak, ASM Press, Washington, D. C., USA.
2. Plants from Test Tube: An Introduction to Micropropagation by Kyte, L. and Kleyn, J.3rd Ed. Timber press, Portland, USA.
3. Plant Cell and Tissue Culture Vol VI by Pollard, W. J. and Walker, Humana press Clifton, USA.
4. Gene Cloning and DNA Analysis by Brown T. A. Blackwell Science, London.
5. Biotechnology and Plant Genetic Resources by Callow, J. A., Ford-Lloyed, B. V. and Newbury, H. J., Conservation and Use, CAB International, Oxon UK
Practical Applications of Plant Molecular Biology by Henry, R. J., Chapman & Hall, London, UK
Proteomics in Functional Genomics by Jolles, O. and Jornvall, H. (eds). Birkhauser Verlag, Basel, Switzerland.

Semester: III, Course No: BOTA C402

Course Name: Seminar and Field Study//Scientific Visit

Credits: 4

Core/Elective: Elective

Course details

Chapter	Contents	Hours
Seminar Presentation and Field Study	The seminar presentation carries 50 marks and field study report also carries 50 marks. Students have to present one seminar in 3 rd semester. The seminar presentation will be evaluated by the department staff members. Students have to submit a detailed field study/scientific visit/field survey report through the guide/ supervisor. This field study report will be evaluated by an external member and	

	the department staff members. Students have to submit their field study's report within one week, after the completion of 3 rd semester end term examinations.	
Total		

Semester: IV, Course No: BOTA E403 (A)
Course Name: Microbial and Molecular Bio-techniques
Credits: 4 **Core/Elective: Core**

Course details

Chapter	Contents	Hours
Unit- I	Techniques of microbial culture: Preparation of solid and liquid media for algae, fungi and bacteria, pure culture isolation, maintenance and storage of microbes, culture characteristics, fixation and staining, cytophotometry and flow cytometry	12
Unit- II	Chromatographic techniques: Principles of chromatography (Adsorption and Partition chromatography), Planar chromatography (Paper and Thin-layer chromatography), Column chromatography (Gas chromatography, Gel exclusion/permeation chromatography, Ion exchange chromatography, Affinity chromatography, HPLC)	12
Unit- III	Molecular Techniques: Sequencing of Proteins and nucleic acids; Southern, Northern and Southern and Western blotting techniques; Methods for measuring nucleic acid and protein interactions. Polymerase chain reaction (PCR), RT-PCR.	12
Unit- IV	Electrophoretic techniques: General principles, support media, electrophoresis of proteins (SDS-PAGE, native gels, gradient gels, isoelectric focusing gels and two dimensional gels), electrophoresis of nucleic acids (Agarose, pulse-field and sequencing gels).	12
Total		48

Referred Text books:

1. Wilson, K. and Walker, J., (1994) Practical Biochemistry: Principles and Techniques 4th ed. Cambridge University Press.
2. Instrumental methods of analysis by Willard *et al.*
3. Practical Biochemistry: Principles and Techniques by Wilson and Walker
4. Principles and Techniques of Biochemistry and Molecular Biology by Wilson and Walker
5. Laboratory Manual of Biotechnology by S. K. Bhatnagar and DeepikaAbrol, S. Chand &Co.

IV, Course No: BOTA E403 (B)
Course Name: Molecular Stress Biology and Biotechnology of Cyanobacteria

Credits: 4 **Core/Elective: Elective**

Course details

Chapter	Contents	Hours
Unit- I	Ecology of cyanobacteria: Molecular ecology (a) Bioinformatics tools and databases (Cyanobase) (b) Model organisms e.g., <i>Synechocystis</i> sp. PCC 6803, <i>Anabaena</i> sp. PCC 7120 (c) environmental genomics, metagenomics	12

	and phylogeny of cyanobacteria across environmental gradients; Nutraceuticals: Cyanobacteria as source of antioxidants, biomolecules, metabolic engineering, metabolic tapping of <i>Spirulina platensis</i> , etc. as a model for desired nutraceuticals	
Unit- II	Cyanobacterial light harvesting complex: Phycobiliproteins, Carotenoids and xanthophylls, structure and regulation of light harvesting genes, light harvesting proteins of cyanobacteria <i>vis a vis</i> light harvesting complex of higher plants	12
Unit- III	Cyanobacterial responses towards abiotic stresses: Salinity, ultraviolet radiation, temperature, herbicides inhibiting PSI and PSII, desiccation and heavy metals; Signal transduction under abiotic stress (SOS pathway).	12
Unit- IV	Gene mining from cyanobacteria: Cyanobacteria as a source of stress tolerant genes for the development of stress tolerant crops using gene pyramiding technology (b) Targeted genetic modifications in cyanobacteria Cyanobacteria and green chemistry: Genetic engineering for production of biofuels (biodiesel, hydrogen production), bioplastics, nanomaterials (nanotechnologies)	12
Total		48

Referred Text books/Suggested readings

1. **Bryant DA** (1995) The Molecular Biology of Cyanobacteria, Kluwer Academic Publisher, Berlin.
2. **Whitton BA, Potts M** (2000) Ecology of Cyanobacteria - Their diversity in Time and Space, Kluwer Academic Publishers, Berlin.
3. **Chavvat F, Chavvat CC** (2013) Advances in Botanical Research Vol 65 Genomics of Cyanobacteria, Elsevier.
4. **Sarma TA** (2012) Handbook of Cyanobacteria, 1st edition, CRC press, Boca Raton, USA.
5. **Larkman WD, Douglass E, Raven JA**, Photosynthesis in Algae, Kluwer Academic Publishers, Berlin.

Semester: IV, Course No: BOTA E404 (A)**Course Name: Phytomedicine****Credits: 4****Core/Elective: Elective****Course details**

Chapter	Contents	Hours
Unit- I	Importance of medicinal plants: Relevance of herbal medicine as primary health care package; sources of information on medicinal plants; Organization of information in database (national and international); Causes for the decline and the current scenario in Indigenous systems of medicine; a comparative evaluation of accessibility and benefits of different systems of medicine	12
Unit- II	Marine Drugs: Introduction, Classification – antimicrobial, anti-inflammatory, antispasmodic, antiparasitic, anticancer, cardiovascular, insecticide, anticoagulants, marine toxins. Algae as potential source of therapeutic compounds	12
Unit- III	Potentials of medicinal plants: WHO and Indian Scenario; herbal medicine – a natural resource; commercial and medicinal uses of medicinal plants in India; Study of few commercial /raw drugs/ medicinal plants - <i>Usnea</i> ; <i>Drynaria</i> ; <i>Pinus</i> ; <i>Vinca rosea</i> ; <i>Rauwolfia serpentina</i> ; <i>Withania somnifera</i> ; <i>Coleus forskohlii</i> ; <i>Emblica officinalis</i> ; <i>Saraca asoca</i> ; <i>Aloe vera</i> ; <i>Glycyrrhiza glabra</i> ; <i>Commiphora mukul</i> , <i>Boswellia serrata</i>	12
Unit- IV	Poisonous plants: Classification; chemical constituents, symptoms, treatment and systematic description of some poisonous plants - <i>Papaver somnifera</i> , <i>Calotropis gigantea</i> , <i>Gloriosa superba</i> , <i>Digitalis purpurea</i> ,	12

	<i>Datura metel, Strychnos nux-vomica</i> Plant Allergens: Types and classification; description, symptoms, chemical constituents and treatment of the following allergic plants - <i>Parthenium hysterophorus, Urtica sp., Acacia sp., Eucalyptus globulus, Arachis hypogaea</i> and <i>Solanum</i>	
Total		48

Referred Text books:

1. Phytomedicine edited by Rouf Ahmad Bhat, Khalid Hakeem, Moonisa Aslam Dervash
2. Phytomedicine edited by Parimelazhagan Thangaraj

Semester: IV, Course No: BOTA E404 (B)**Course Name: Environment Law****Credits: 4****Core/Elective: Elective****Course details**

Chapter	Contents	Hours
Unit- I	Introduction: Meaning and Definition of Environment and Environment Pollution: Problem and prospects;- Ozone Depletion, Global Warning – Climatic Changes – Need for the preservation, conservation and protection of Environment – Environmental Pollution – Kinds, Causes and effects of Pollution	12
Unit- II	Protection of Forest and Wild life: Indian Forest Act, 1927: Kinds of forest: Private, Reserved, Protected and Village Forests, The Forest (Conservation) Act, 1980; The Wild Life (Protection) Act, 1972: Authorities to be appointed and constituted under the Act, Hunting of Wild Animals, Protection of Specified Plants, Protected Area, Trade or Commerce in wild animals, animal articles and trophies; Its prohibition.	12
Unit- III	International Law: International Environmental Regime – Transactional Pollution – Customary International Law - Stockholm Declaration on Human Environment, 1972 – The role of UNEP for the Protection of Environment – Ramsar Convention 1971 – Bonn Convention (Migratory Birds) 1992 - Nairobi Declarations, 1982 - Rio, Conference on Environment and Development, 1992 (Earth Summit), Rio Declaration	12
Unit- IV	Convention on Biological Diversity, The Indian Biological Diversity Act 2002, v. Convention on Climate Change 1992 – Kyoto Protocol 1997, Johannesburg Convention 2002	12
Total		48

Referred Text books:

1. Environmental Law & Policy in India – Shyam Diwan, Armin Rosencranz
2. Environmental Law in India – P. Leelakrishnan
3. PIL and Environmental Protection-Geetanjali Chandra
4. The Water (Prevention and Control of Pollution) Act, 1974
5. The Air (Prevention and Control of Pollution) Act, 1981
7. Richard L. Riversz, et al. (eds.) Environmental Law, the Economy and
8. Sustainable Development (2000), Cambridge.
9. S.K.Nanda, Environmental Law, 2007
10. Relevant Bare Acts/Notifications.
11. Paras Diwan: Studies on Environmental Cases.
12. Lal's Commentaries on Water and Air Pollution and Environment Protection Laws

Semester: IV, Course No: BOTA D405**Course Name: Dissertation****Credits: 4****Core/Elective: Core****Course details****DISSERTATION/PROJECT WORK**

Each student is required to carry out a project work on a particular problem related to Botany/Biosciences with one of the faculty members of the P.G. department of Botany or from other department of Berhampur University or from any reputed Universities/Institutes/Organizations duly approved by the Head of the Department to fulfill the Master's degree. Students in advance may contact the respective researchers/scientists from around the country to carry out the work for the project work much before the start of the 4th Semester (beginning/mid of the 3rd semester) to avail sufficient time for the planning and execution of the work.

Dissertation carries 200 marks. The dissertation will be evaluated jointly by both internal (supervisor) and external examiners for 150 marks. Seminar presentation carries 50 marks. The seminar presentation will be evaluated by the board of examiners consisting of the department faculty members and an external examiner from outside the University duly approved by the authority. The student has to submit their dissertation before the commencement of the practical examination (Paper No: BOTA P403) for evaluation and the dissertation must be certified with Turnitin for Plagiarism/similarity index certificate, signed by the Internal (supervisor) and the candidate. The UGC-2019 plagiarism rules are recommended by Berhampur University 2019-2020 prior to acceptance of M.Sc. dissertation for evaluation.

Format of M.Sc. Dissertation:

1. Title Page
2. Declaration certificate from the Candidate
3. Certificate from the supervisor
4. Plagiarism certificate, signed by supervisor and the candidate
5. Abstract/summary
6. Materials and Methods
7. Results
8. Discussion
9. Conclusion
10. References

Semester: IV, Course No: VAC**Course Name: Cultural Heritage of Ganjam****Credits: NC****Core/Elective: Non Credit****Course details**

Chapter	Contents	Hours
Unit- I	Kabi Samrat Upendra Bhanja: Life and Literary works	08
Unit- II	Other Literatures of Ganjam	08
Unit- III	Cultural Heritage of Ganjam	08
Unit- IV	Folk Tradition of Ganjam	08
Total		32

CBCT papers is interdisciplinary

Botany students can choose any of the under-mentioned courses offered by other departments of BU

Semester: III, Course No: BIOT CT-300

Course Name: Biotechnology in Human Welfare

Credits: 4

Core/Elective: Interdisciplinary

Chapter	Contents	Hours
Unit- I Basic Concepts of Biotechnology	Basic Concepts of Biotechnology and its applications, Recombinant DNA technology; gene cloning, human genome project, Tools of Bioinformatics.	10
Unit- II Agricultural and Environmental Biotechnology:	Application in Breeding, Nitrogen fixation, Transfer of pest resistance genes to plants, Interaction between plants and microbes, Qualitative improvement of livestock. Crop plant genome project. Chlorinated and non-chlorinated organ pollutant degradation; degradation of hydrocarbons and agricultural wastes, stress management, development of biodegradable polymers	10
Unit- III Medical and Pharmaceutical Biotechnology	Development of therapeutic agents, recombinant live vaccines, gene therapy, Diagnostics; Principle of DNA fingerprinting, Stem cell Biology, Ethical issues in Biotechnology research	10
Unit- IV Industrial Biotechnology	Introduction to bioprocess technology. Range of bioprocess technology and its chronological development. Basic principle of fermentation technology. Types of microbial culture and its growth kinetics– Batch, Fed batch and Continuous culture.	10
Total		40

Referred Text books:

1. John E. Smith. Biotechnology (2009) 5th Edition, Cambridge University Press.
2. Ignacimuthu Biotechnology: An Introduction (2012) 2nd Edition, Narosa Publishing House Ltd., India

Semester: III, Course No: ENVS CT-300

Course Name: Population and Environmental Issues

Credits: 4

Core/Elective: Interdisciplinary

Chapter	Contents	Hours
Unit 1: Demographic Overview	Introduction, History of human population growth, The demographic transition: India and World; Projections of population growth, Effects of human population growth, Unsustainable lifestyle – increased consumerism	12
Unit-2:	Energy Crisis: Background, Possible causes (Energy demand and consumption, Production capacity and dependence on imports);	12

Energy Crisis	Ecologically friendly alternatives and Possible Measures	
Unit-3: Environmental Contamination	Ambient Air pollution, Indoor air pollution and Health Impacts, Surface water pollution, Ground water pollution and Health Impacts, Solid Waste Pollution and Sustainable Solid Waste Management; Hazardous waste pollution, Radioactive waste, Electronic waste and Biomedical waste	12
Unit-4: Ecological Footprints and Carrying Capacity	Ecological footprints: Concepts, perspectives, carbon footprint, water footprint, Overshoot of ecological footprint and biocapacity of planet Earth, Resources Depletion.	12
Total		48

Referred Text Books

1. Cunningham WP and Cunningham MA (2002). Principles of Environmental Science: Inquiry and Applications. McGrawHill Publications, New Delhi, 418 pp.
2. Johri R (2009). E-Waste: Implications, regulations, and management in India and current global best practices. TERI Press, New Delhi. 330 pp.
3. McKillop A and Newman S (2005). The Final Energy Crisis. Pluto Press, London. 325 pp.
4. Miller GT Jr. (1996). Living in The Environment: Principles, Connections, and Solutions. 9th Edition. Wadsworth Publishing Company, New York. 727 pp.
5. Park C (2001). The Environment: Principles and Applications. 2nd Edition, Routledge Publishers, London and New York, 598 pp.

Semester: III, Course No: MARB CT-300

Course Name: Environmental Impact Assessment and Management Plans

Credits: 4

Core/Elective: Interdisciplinary/Elective CBCT

Units	Contents	Hours
Unit-1	Introduction to Environmental Impact Assessment. Environmental impact Statement and Environmental Management Plan. EIA notifications of Government of India from time to time. Guidelines for Environmental audit.	20
Unit-2	Environmental Impact Assessment (EIA) Methodologies. Generalized approach to impact Assessment. EIA processes, Scoping EIA methodologies, Procedure for reviewing Environmental impact analysis and statement. Environmental Management Plan and its monitoring, Evaluation of proposed actions.	20
Unit-3	Nexus between development and environment, Socio-economic impacts, Aid to decision making, Formulation of development actions, Sustainable development, categorization of projects under EIA, project planning and implementation, Impact prediction, Mitigation measures.	20
Unit-4	Introduction to. Selection of appropriate procedures, Restoration and rehabilitation technologies. Landuse policy for India. Urban planning for India. Rural planning and landuse pattern. Environmental priorities in India	20

Units	Contents	Hours
	and sustainable development. CRZ notifications and Environmental Impact Assessment in coastal zone. Coastal zone management plans of India.	
Total		80

Referred Text Books / References

1. W.P. Cunningham, 2010: Principles of Environmental Science.
2. Satsangi and A.Sharma 2015: Environmental Impact Assessment and Disaster Management.
3. R.R.Barthwal 2002: Environmental Impact Assessment.
4. R.Paliwal and L.Srivastava, 2014: Policy Intervention Analysis- Environmental Impact Assessment.
5. C.H.Eccleston, 2004: Environmental Impact Assessment.
6. J. Hou, 2015: New Urbanism: The future City is Here.
7. James R. Craig, 2010: Earth Resources and the Environment.
8. J. Glasson, 2011: Introduction to Environmental Impact Assessment.
9. Glasson J., Therivel R., Chadwick A, (2005): Introduction to environmental impact assessment Taylor & Francis Group, London and NewYork.
10. Morris P., Therivel R., (2009): Methods of Environmental Impact Assessment 2009, 3rdedition, Routledge, Taylor & Francis Group, London and NewYork.
11. Morris P., Therivel R., (2001): Methods of Environmental Impact Assessment 2001, 2ndedition, Spon Press, Taylor & Francis Group, London and NewYork.
12. Eccleston C. H., (2011): Environmental Impact Assessment 2011, CRC Press, Taylor & Francis Group.

Semester: III, Course No: ZOOL CT-300

Course Name: Conservation Biology

Credits: 4

Core/Elective: Interdisciplinary/Elective CBCT

Units	Contents	Hours
Unit-1 Basic Concepts	Biodiversity (genetic diversity, species diversity, ecosystem diversity) and its use, Causes of biodiversity losses, IUCN red list of threatened species, Invasive species, Alien species, Indicator species, Keystone species, Umbrella species, Flagship species, Charismatic species.	16
Unit-2 Measuring Biodiversity	Alpha, Beta and Gamma diversity , Species Richness(S), Evenness(E) , Simpson index(D), Shannon-Weiner Index (H'), idea on biodiversity calculator software.	16
Unit-3 International and National efforts for conserving biodiversity	National Act and International Act related to Biodiversity Conservation: Biological diversity Act 2002, National Biodiversity Authority, People Biodiversity Registrar, Convention on Biological diversity, Cartagena Protocol and Nagoya Protocol, Sustainable Development Goal and Biodiversity, Aichi Biodiversity Targets, CITES, WWF.	16
Unit-4	In-situ conservation (Indian context) (Sanctuaries, National and Biosphere reserves) and Ex-situ conservation (Indian context) (Botanical gardens,	16

Units	Contents	Hours
Conservation Measures and Molecular Phylogeny	zoos, cryopreservation, gene bank) NCBI data base, basic idea on phylogenetic tree, Construction and interpretation of molecular phylogeny tree based on COI and 16s rRNA gene sequences using MEGA and other tools.	
Total		64

Referred Books and References:

1. Fundamental of Ecology: O.P Odum
2. Campbell Biology: Reece, Urry, Cain et al.
3. Evolutionary analysis: Herron and freeman
4. Convention of Biological diversity- <https://www.cbd.int/>
5. Aichi Biodiversity Targets- <https://www.cbd.int/sp/targets/>
6. IUCN-<https://www.iucn.org/>
7. CITES-<https://cites.org/eng>
8. <https://sustainabledevelopment.un.org/topics/biodiversityandecosystems>
9. <https://bch.cbd.int/protocol/>
10. <https://www.cbd.int/abs/>
11. <https://wwf.panda.org/>
12. <http://moef.gov.in/>
13. <http://nbaindia.org/>

BERHAMPUR UNIVERSITY

Course Curriculum & Syllabus: 2023-24 **(M. Sc. Chemistry)**



P. G. Department of Chemistry
BERHAMPUR UNIVERSITY
Bhanja Bihar
Berhampur-760007, Odisha



Course Curriculum & Syllabus: 2023-24 (P. G. Department of Chemistry)



About the department: P. G. Department of Chemistry Berhampur University was established in 1972. The Department offers a two-year Master's degree course (M. Sc.) in Chemistry. Choice Based Credit System (CBCS) has been introduced from 2015 to keep the Students up-to-date with development of higher education in India and abroad. The Post-Graduate curricula is recently undergone major orientation congruent with the development and trends in the subject to help the students to seek a career in different thrust areas of the subject like Synthetic Organic Chemistry, Organic Synthesis, Natural Product Synthesis, Drug Discovery, Inorganic & Organometallic chemistry, Physical Chemistry, Nano-Chemistry and Environmental Chemistry etc. In order to gain competency in research, IV-semester Student has to take up research project in different areas of Chemistry. The Department of Chemistry offers Ph. D. degree in the subject. The Ph. D. programs offered broad areas of Chemistry such as Organic Chemistry, Drug discovery & Medicinal chemistry, Inorganic Chemistry, Bio-inorganic Chemistry, Water Treatments, Catalysis and Nanoparticles. By cultivating both strong academic relations between our students and faculty, and successful connection between course and research programmes, students at Berhampur University can succeed at the frontiers of research in chemistry and chemical biology.

Core Research Areas

The faculty members of the department work on all contemporary topics in chemistry, ranging from Synthetic organic chemistry, Drug Design, Medicinal chemistry, Chemical Biology, Materials Chemistry, Surface and Interface Science, Nanochemistry, Molecular Spectroscopy, Organometallic chemistry, and environmental chemistry.

Programme Outcome

Berhampur University has consistently maintained its position among the top chemistry departments in world rankings over the past decade. The department focuses on top-quality research in specific current areas such as Synthetic Organic chemistry, chemical biology of drugs, and Nanochemistry with a particular aim on disease control and cure. To make the department a flourishing center of excellence in teaching, curriculum development, cutting-edge research and popularizing Chemistry in society, attempts are being made to make international collaborations for students and faculty mobility and research cooperation. The department would like to attain worldwide recognition in Chemistry research and teaching. Additionally, the department also strives to contribute to industry and address problems of societal importance. The department also aims at Chemistry outreach in the form of books, online courses, and other chemistry education activities that showcase the role of "Chemistry as a central science." **The department aims to produce high-quality M. Sc. and Ph. D. students with application-oriented skills in industry and academia.**

Faculty members:

Dr. Satyanarayan Sahoo Ph. D: IIT-Madras	Asst. Professor (III)	Inorganic Chemistry
Dr. Ganngam Phaomei Ph. D: Manipur University	Asst. Professor (III)	Physical Chemistry
Dr. Laxmidhar Rout Ph. D: IIT-Guwahati, Postdoc: USA, Germany, France	UGC-Asst. Professor	Synthetic Organic Chemistry
Dr. Bibhuti Bhusan Parida Ph. D: CSIR-IICT, Postdoc: WSU (USA), France	Asst. Professor (II)	Synthetic Organic Chemistry

Facilities: IR, UV, Fluorescence, Polarimeter, Cryocooler, Gouy's magnetic balance, Fumehood, Laminar fume hood, Rotavapour, centrifuge, Ice- flake machine and other necessary equipments.

Programs offered: M. Sc., Ph. D.

General Course Framework & Structure (M. Sc. Chemistry) 2023-24

SEMESTER- I: Total Credits/Total core/electives (22/05/00); Total marks: 500

Course Number	Coursed Name	Mark		Credit	Exam Time	
		Mid sem	End sem		Mid sem	End sem
CHEM C101	Organic Chemistry-I	20	80	4	1h	3h
CHEM C102	Inorganic Chemistry-I	20	80	4	1h	3h
CHEM C103	Physical Chemistry-I	20	80	4	1h	3h
CHEM C104	Molecular Spectroscopy	20	80	4	1h	3h
CHEM P105	Physical Practical	100		6	6h	

SEMESTER-II: Total Credits/Total core/electives (22/05/00); Total marks: 500

Course Number	Coursed Name	Mark		Credit	Exam Time	
		Mid sem	End sem		Mid sem	End sem
CHEM C201	Organic Chemistry-II	20	80	4	1h	3h
CHEM C202	Inorganic Chemistry-II	20	80	4	1h	3h
CHEM C203	Physical Chemistry-II	20	80	4	1h	3h
CHEM C204	Organic Spectroscopy	20	80	4	1h	3h
CHEM P205	Organic Practical	100		6	6h	
CHEM VAC1	Materials Characterization	100		NC	3h	

SEMESTER- III: Total Credits/Total core/electives (22/02/03*); Total marks: 500

Course Number	Coursed Name	Mark		Credit	Exam Time	
		Mid sem	End sem		Mid sem	End sem
CHEM C301	Physical Organic Chemistry	20	80	4	1h	3h
CHEM E302	Advanced Organic Synthesis	20	80	4	1h	3h
CHEM E303	Organometallic Chemistry	20	80	4	1h	3h
CHEM E304	Analytical Chemistry	20	80	4	1h	3h
CHEM E305	Nanochemistry	20	80	4	1h	3h
CHEM CT300	Environmental Chemistry	20	80	4	1h	3h
CHEM P306	Inorganic Practical	100		6	6h	
CHEM VAC2	Chemistry and Society	100		NC	3h	

SEMESTER-IV: Total Credits/Total core/electives (22/02/03**); Total marks: 500

Course Number	Coursed Name	Mark		Credit	Exam Time	
		Mid sem	End sem		Mid sem	End sem
CHEM C401	Physical Chemistry-III	20	80	4	1h	3h
CHEM E402	Bio-organic Chemistry	20	80	4	1h	3h
CHEM E403	Bio-inorganic & Supramolecular Chemistry	20	80	4	1h	3h
CHEM E404	Asymmetric Synthesis	20	80	4	1h	3h
CHEM E405	Polymer Chemistry	20	80	4	1h	3h
CHEM E406	Industrial Chemistry	20	80	4	1h	3h
CHEM E407	Organic Synthesis in medicines	20	80	4	1h	3h
CHEM D408	Dissertation	100		6		
VAC3	Cultural Heritage of South Odisha			NC		

*3rd semester students can opt for two elective courses out of four (CHEM E302, 303, 304 and 305) and one course in other department. Other department students can opt for CHEM CT300.

** 4th semester students can opt for three elective courses from six (CHEM E402, 403, 404, 405, 406, 407).

(CHEM: Chemistry, C: Core, E: Elective; P: Practical (Core paper), VAC: Value Added Course & D: Dissertation (Core paper).

SEMESTER-I

Course No. CHEM C101	Course Name: Organic Chemistry-I	
Semester: I	Credits: 4	Core Course
Pre-requisites: B.Sc. (Hons.) Organic Chemistry		
Course Outcome: This course gives the basics of organic chemistry with an in-depth understanding of a broad range of basic organic reactions and rearrangements, fundamental prospective such as idea of reaction intermediates, drawing reaction mechanism, name reactions-rearrangement, stereochemistry of products.		

Course details

Unit	Contents	Hours/ Semester
1	<p>Basics in Organic Chemistry</p> <p>Huckel's rule, Aromaticity: aromatic, non-aromatic and anti-aromatic nature of compounds; Brief idea on pKa of organic molecules; Brief on Regioselective, Stereospecific, Stereoselective and Chemoselective reactions; HSAB principle; NGP, Classical and non-classical carbocations; Bredt's rule; Various Elimination reactions: Pyrolytic elimination, Cope Elimination, Hoffmann Elimination, Chugaev elimination; Various substitutions reactions: Sandmeyer Reaction, Von Richter, Sommelet-hauser, and Smiles rearrangements.</p>	10
2	<p>Stereochemistry</p> <p>Configurational and conformational isomerism in acyclic and cyclic compounds, Conformational analysis of cycloalkanes, decalins, Conformations of sugar, <i>D</i>, <i>L</i>-notation, <i>R</i>, <i>S</i>-notation, <i>Syn</i> pentane interaction, Allylic strain (A1,2 and A1,3), <i>anti</i>-periplanar, <i>syn</i>-periplanar orientation, chirality of molecules with more than one chiral center, threo and erythro isomers, meso compounds, Chirality (centre, axial, planar & helical), Optical activity in the absence of chiral carbon (biphenyls, allenes and spiranes), Optical purity, specific rotation, enantiomeric excess (ee), diastereomeric ratio, Zimmerman–Traxler model in Aldol reaction, Cram's rule and Felkin-Ahn model.</p>	10
3	<p>Reactive Intermediates & Fragmentations:</p> <p>Carbenes: Generation, Property and structure of carbene, Carbene Insertion in C=C Bond, carbene Insertion into C-H Bond, Carbene Insertion into O-H Bond and various reactions where carbene involved as intermediate; Nitrenes: Generation, Property and structure of Nitrenes, reactions of nitrenes and allied reactions; Ketenes: Generation, Property and structure of Ketene, reactions of Ketenes and allied reactions; Fragmentation: Eschenmoser Fragmentation, Grob Fragmentation and Wharton Fragmentation.</p>	10
4	<p>Name Reactions & Rearrangement: Gattermann-Koch, Reformatsky, Perkin, Houben-Hoesch, Vilsmeier-Haack, Prins, Pinner, Appel, Mannich, Michael addition, Stork-Enamine, Robinson annulation, Baylis-Hillman, Knoevenagel, Claisen condensation, Stobbe condensation, Claisen-Schmidt, Shapiro, Bamford-Stevens, Hunsdiecker, Wittig, Horner-Wadsworth-Emmons (HWE), Aldol, Nazarov Cyclisation, Benzoin, Kulinkovich cyclopropanation, Mitsunobu, Nef, Chichibabin, Arndt-Eistert, Ritter, Barton-McCombie deoxygenation, Barton decarboxylation.</p> <p>Baeyer-Villiger, Favorskii, Dienone-Phenol, Pinacol-Pinacolone, Wagner-Merwein, Benzidine, Benzilic Acid, Overman, Payne, Neber, Beckmann, Hoffmann, Curtius, Schmidt, Loosen, Cope, Claisen, Fries, Stevens, Pummerer, Brook, Stieglitz, Carrol.</p>	15
Total		45

Reference & Textbooks:

- Organic Chemistry: Clayden, Greeves and Warren, Oxford Univ. Press, 2nd Ed (2012).
- Modern Organic Reactions: H. O. House, W.A. Benjamin. 2nd Ed. (1972)
- Principles of Organic Synthesis: R.O.C. Norman and J. M. Cox, CRC Press 3rd (2014).

- Stereochemistry of Organic Compounds, E. L. Eliel, S. H. Wilen, L.N. Mander, John Wiley & Sons, Inc., New York, NY. (1994).
- A Guide Book of Mechanism in Organic Chemistry, Peter Sykes, Longman. 6th Ed. (1999)
- Advanced Organic Chemistry, F. A. Carey and R. J. Sundberg, Part-A and B Springer, 5th Ed (2005)
- Walsh, P. J., Kozlowski, M. C. Fundamentals of Asymmetric Catalysis, University Science Book, 2009.
- Ojima, I. Catalysis in Asymmetric Synthesis, Wiley-VCH, 2004.
- Carreira, E., Kvaerno, L. Classics in Stereoselective Synthesis, Wiley-VCH, 2009.
- Reaction Mechanism in Organic Chemistry, S. M. Mukherjee and S. P. Singh, McMillan, 3rd Ed (2009)
- Structure and Mechanism in Organic Chemistry, C. K. Ingold, Cornell University Press, 3rd (1957).
- Stereochemistry: Conformation and Mechanism, P. S. Kalsi, New Age International Publishers.
- Name reactions and Reagents in Organic Synthesis 2nd Ed, B. P Munday, M. G. Ellerd and F. G. Favaloro, Wiley

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM C102	Course Name: Inorganic Chemistry-I	
Semester: I	Credits: 4	Core Course
Pre-requisites: B.Sc. (Hons.) Inorganic Chemistry		
Course Outcome: This course gives an in-depth understanding of a broad range of basics of inorganic chemistry. The student will learn regarding type of bonding nature in the molecule and metal complex. The course will give an overall understanding of bonding theory such as VBT, MOT; π -acceptor ligands; Rings, Cages and Metal Clusters; Chemistry of main group elements.		

Course Details

Unit	Contents	Hours/ Semester
1	Valence bond Theory: Qualitative discussion on valence bond theory-formation of hydrogen molecule, VSEPR theory, shapes of simple molecules and ions, Hybridization and wave mechanical description for sp , sp^2 and sp^3 hybrid orbitals, qualitative idea about dsp^2 , dsp^3 and d^2sp^3 hybrid orbitals, Linnet's double quartet theory and spectra of simple molecules. Molecular Orbital Theory: Qualitative discussion on molecular orbital theory, bonding and antibonding orbitals, energy distribution and stability, MO energy level diagrams of simple diatomic and polyatomic molecules, Walsh diagram.	12
2	Metal π-Complexes: Chemistry of metal carbonyls, 18-electron rule, Constitution of metal carbonyls: mononuclear, poly nuclear clusters with terminal and bridge carbon monoxide ligand units, Carbonylate anions, Carbonyl hydrides and Carbonyl halides. Metal nitrosyl and other types of metal nitric oxide complexes, Cyanonitrosyl complexes of metals, Brown ring compounds, dinitrogen complexes.	12
3	Rings, Cages and Metal Clusters: Inorganic catenation and hetero catenation; Synthesis, structure and reactivity of borazines, phosphazenes, borides, carbides, silicones, silicates, boron nitride; boranes, carboranes, metallaboranes and metallacarboranes, Isolobal analogs of p-block and d-block clusters; low and high nuclearity carbonyl clusters; compounds with metal-metal multiple bonds.	12
4	Chemistry of Main Group elements: General characteristics, Structure and Reactions of simple and industrially important compounds: Hydrides, Oxides and Oxoacids of pnictogens (N, P), chalcogens (S, Se & Te) and halogens, Chemistry of noble gases, Pseudo halogens and Interhalogen compounds, Allotropes of carbon, phosphorous and sulphur, Acid-base concepts and principles (Lewis, Brønsted, HSAB and acid-base catalysis)	12
Total		48

Reference & Textbooks:

1. Advanced Inorganic Chemistry: F. A. Cotton, G. Wilkinson, C. A. Murillo, M. Bochmann, John Wiley and Sons Press, 3rd Ed. (1995).
2. Inorganic Chemistry-Principles of Structure and Reactivity: J. E. Huheey, E. A. Keiter, R. L. Keiter, Harper-Collins, NY, 4th Ed. (1993).
3. Inorganic Chemistry: G. L. Missler and D. A. Tarr, Prentice Hall, 3rd Ed. (2003).
4. Inorganic Chemistry: D. F. Shriver, and P. W. Atkins, Oxford University, Oxford, 3rd Ed. (1999).
5. Chemistry of the Elements. N. N. Greenwood, and A. Earnshaw, Elsevier, 2nd Ed. (1997).

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM C103	Course Name: Physical Chemistry-I	
Semester: I	Credits: 4	Core Course
Pre-requisites: B.Sc. (Hons.) Physical Chemistry		
Course Outcome: This course will provide the basic concept of the structure, behaviour of molecule and chemical phenomena at the microscopic level.		

Course Details

Unit	Contents	Hours/ Semester
1	Symmetry and group theory: Symmetry elements and Symmetry operations, Mathematical requirements for a point group, Group, Subgroup and classes, matrix representation for the E, C _n , σ _v , S _n , Matrix representation of point groups (C _{2v} , C _{3v} , C _{4v}), Transformation matrices, Irreducible representation, Construction of character table (C _{2v} , C _{3v} , C _{4v} , C _{2h} , D ₂ , D _{2d}), Mulliken symbolism rules for IR _S , Standard reduction, Direct product.	12
2	Application of group Theory: Symmetry of Normal modes of Molecules: Infrared and Raman activity for C _{2v} and C _{3v} , Linear combination of atomic orbitals (LCAO) theory: Hybridization scheme for σ and π bonding: D _{4h} , T _d , O _h ; projection operator and the ligand group orbitals, Hybrid orbital as linear combination of atomic orbitals, Molecular orbitals theory of coordination compounds: σ and π-bonding in octahedral complexes, Formation of LGOs, Formation of MOs, Construction of MO energy level diagram.	12
3	Quantum chemistry: Black Body radiation, photoelectric and Compton effects, wave-matter duality, Postulates of quantum mechanics, Operator: Linear operator and Hermitian operator, set up quantum mechanics operators (Momentum, Hamiltonian and Angular momentum operator); Translational motion: Particle in one and three dimensional boxes, Tunnelling; Vibrational motion of a particle; Rotational motion: particle in a ring, sphere, Rigid rotator.	12
4	Atomic and Molecular structure: Hydrogen atom and hydrogen like atoms, Shapes of s, p and d-orbitals. Approximation methods: The variation method, Perturbation method (first order, second order), Application of variation methods and perturbation method to Helium atom, The ground and excited states of Helium, Huckel theory of conjugated systems, Bond order and charge density calculation, Application to ethylene, butadiene, cyclopropenyl radical.	12
Total		48

Reference & Textbooks:

1. K. Veera Reddy, Symmetry and Spectroscopy of Molecules, New Age International, Delhi
2. Mark Ladd, Symmetry and group theory in chemistry, Horwood Publishing Chichester, England.
3. Arthur M. Lesk, Introduction to Symmetry and Group Theory for Chemists, Kluwer Academic Publishers, London.

4. Kieran C Molloy, Group Theory for Chemists: Fundamental Theory and Applications, Woodhead Publishing, Oxford.
5. F. A. Cotton, Chemical Applications of Group Theory, Wiley, India.
6. I.N. Levine, Quantum Chemistry, 5th edition (2000), Pearson Educ. Inc., New Delhi.
7. R.K. Prasad, "Quantum Chemistry", New Age International, New Delhi
8. John P. Lowe & Kirk A. Peterson, Quantum Chemistry, Elsevier/Academic Press
9. Peter Atkins & Ronald Friedman, Molecular Quantum Mechanics, , Oxford Press.
10. Michael Mueller, Fundamentals of Quantum Chemistry, Kluwer Academic Publishers New York.

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, mock test, assignment, doubt clearing class, Assignments.

Course No. CHEM C104	Course Name: Physical Spectroscopy	
Semester: I	Credits: 4	Core Course
Pre-requisites: B. Sc. (Hons.) Chemistry		
Course Outcome: This course gives an in-depth understanding of a broad range of basics of molecular spectroscopy. The student will learn about microwave, vibrational, Raman, and photoelectron spectroscopy. In addition student will learn the application of EPR and Mossbauer spectroscopy.		

Course Details

Unit	Contents	Hours/ Semester
1	Microwave spectroscopy: Classification of molecules, Rigid rotator model, Effect of isotopic substitution on transition frequencies, Non- rigid rotator., Stark effect, Applications. Atomic spectroscopy: Electronic configuration, Russell-Saunders terms and coupling schemes, Franck-Condon principle, magnetic effects: spin-orbit coupling and Zeeman splitting,	12
2	Vibrational Spectroscopy: Vibrational energy of diatomic molecules, zero point energy, force constant and bond strength, Morse potential energy diagram, vibrational-rotational spectroscopy, P,Q,R branches, break – down of Oppenheimer approximation, vibration of polyatomic molecules, Selection rules, Normal mode of vibration, Group frequencies, Overtones, Hot bands, Factors affecting the band positions and intensities for IR- region.	12
3	Raman Spectroscopy: Classical and quantum theories of Raman effect. Pure rotational, vibrational and vibrational-rotational Raman spectra, selection rules, Mutual exclusion principle. Resonance Raman spectroscopy, coherent anti Stokes Raman spectroscopy (CARS). Photo electron spectroscopy: Basic principles, Photoelectric effect, Ionisation process, Koopmans's thermo photoelectron spectra of simple molecules, ESCA, Chemical information from ESCA, Auger electron spectroscopy.	12
4	EPR Spectroscopy: Electron spin resonance spectroscopy : Basic principles , Zero- field splitting and Kramer's degeneracy, Lande splitting factor g-value, Measurement techniques, Application (H, CH ₃ , AlH ₃ , Pirazine, benzyl, (OMe)CH ₂ , TEMPO, Cu(II), V(III), Ti (II), Mn(V) radicals). Mossbauer spectroscopy: Basic principles, Spectral parameters and spectral display, Application of the techniques to study the bonding and structure of Fe ²⁺ and Fe ³⁺ compounds including those of intermediate spins.	12
Total		48

Reference & Textbooks:

1. Fundamental of Molecular Spectroscopy, C. N. Banwell and E. McCash, Tata McGraw Hill, 4th edition, 1994, New Delhi.
2. Spectroscopic identification of organic compounds- R.M. Silverstein and G.C. Bassler

3. Spectroscopic methods in organic chemistry- D.H. Williams and I. Fleming
4. Absorption spectroscopy of organic molecules- V.M. Parikh
5. Modern Spectroscopy, J.M.Hollas, John Wiley, 4th edition, 2004, Sussex.
6. Applied Electron Spectroscopy for Chemical Analysis Ed. H. Windawi and F. L. Ho, Wiley Inter science.
7. Physical Methods in Chemistry, R.S.Drago, Saunders College.
8. Introduction to Molecular Spectroscopy, G.M.Barrow, McGraw Hill
9. Electron Paramagnetic resonance of transition ions, A. Abraham and B. Bleaney, Clarendon Press, 1970, Oxford.
10. Introduction to magnetic resonance , A Carrington and A D McLachalan, Harper & Row
11. Introduction to Photoelectron Spectroscopy, P.K.Ghosh, John Wiley
12. Molecular Spectroscopy, P.S. Sindhu, Tata McGraw Hill , 1985, New Delhi.
13. Symmetry and Spectroscopy of Molecules, , K.V. Reddy, New Age International (P) Ltd., 1st edition, 1998, New Delhi

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM P105	Course Name: Physical Practical	
Semester: I	Credits: 6	Core Course
Pre-requisites: B. Sc. (Hons.) Physical Practical		
Course Outcome: The student will learn practical knowledge of physical and analytical chemistry		

Course Details

Unit	Contents	Hours/ Semester
1	Determination of surface excess of alcohols and the critical Micelle Concentration (CMC) of surfactant from the measurement of surface tension. Determination of the Molecular weight of a polymer and Isoelectric point of gelatine by viscosity measurement	20
2	Determination of critical solution temperature (CST) and study of phase diagram of three-component liquid (ternary) system at room temperature. Determination of activation energy from the Kinetic measurement of hydrolysis of ester and determination of rate constant of inversion of sucrose by polarimeter and also verification of the effect of catalyst on the rate constant.	20
3	Determination of dissociation constant of acid and determination of hydrolytic constant (K_h) pH-metrically. Determination of iron content in the given ferrous ammonium sulphate solution by Colorimetry and determination the composition and stability constant of Fe(III) salicylic acid complex colorimetrically by Job's method of continuous variation. Determination of Λ_o and K_a of weak electrolyte at a definite temperature by Debye Huckel Onsagar equation, determine the stoichiometric ratio in the complexometric titration of $HgCl_2$ against potassium iodide conductometrically and Determine the strength of HCL and acetic acid (AcOH) from the mixture of acids by strong alkali (NaOH) conductometrically.	32

4	Determination of total cation concentration in natural water and To estimate the amount of Na ⁺ ion in a given sample using ionisation resin column. Potentiometric estimation of Mohr salt solution with standard potassium dichromate solution and also determination of formal potential (reduction) of ferric-ferrous system, determination of activity solubility product of silver chloride by emf measurement, potentiometric titration of a weak acid with caustic soda solution and determination of the dissociation constant of the acid using quinhydrone electrode at room temperature.	24
Total		96

Reference &Text books:

1. Experimental Physical Chemistry by R.C. Das and B. Behera
2. Text book of Quantitative Inorganic Analysis by A.I. Vogel, ELBS(1978)
3. Experimental Physical chemistry by J B Yadav, Goel Pub. House,(1981)
4. Senior Practical Physical Chemistry by B. C. Kosla, Simla Printers New Delhi (1987).
5. Experimental Physical Chemistry by Daniel et al., McGraw Hill, New York (1962).
6. Practical Physical Chemistry by A.M James and P. E. Pritchard, Longman's Group Ltd (1968)

Assessment and Expectations from Class: Tutorial, Quiz, Endsem-100, attendance, Punctuality, doubt clearing class.

SEMESTER-II

Course No. CHEM C201	Course Name: Organic Chemistry-II	
Semester: II	Credits: 4	Core Course
Pre-requisites: B Sc. (Hons.) Organic Chemistry and C101		
Course Outcome: This course gives an in-depth understanding of a broad range of organic reactions from oxidation-reduction mechanism perspectives. It will give knowledge of interconversion of organic functional groups using different reagents. It gives in-depth knowledge and understanding on organic photochemistry, how the chemical transformations achievable through interaction of substrates with light and/ heat.		

Unit	Contents	Hours/ Semester
1	Oxidation Different oxidative processes of common functional groups using different reagents. Cr-based oxidation: CrO ₃ , Jones reagent, Collins reagent, PCC, PDC; DMSO (activated S-based) mediated oxidation: General mechanism of activated S-based oxidation, Swern oxidation, Pfitzner-Moffatt oxidation, Parikh-Doering oxidation, Corey-Kim oxidation; Kornblum oxidation, Iodine-based oxidation: IBX, Dess-Martin-Periodinane (DMP) oxidation, BAIB-TEMPO, Ru-based Oxidation: RuO ₄ , TPAP; Sulfonium ylide oxidation; Oppenauer oxidation; MnO ₂ , Ag ₂ O-oxidation; amines (N-Oxidation), N-Oxoammonium-mediated Oxidation; Alkene oxidation: mCPBA, (H ₂ O ₂ /OH ⁻), Dioxirane, Jacobsen epoxidation, OsO ₄ , Sharpless Asymmetric Epoxidation (SAE), Sharpless Asymmetric Dihydroxylation (SAD) (AD-mix- α and AD-mix- β); Wacker oxidation, Ozonolysis, Hydroboration-Oxidation (BH ₃ , and selectivity with 9-BBN, t-hexyl, Sia ₂ BH), Oxymercuration-demercuration, Pb(OAc) ₄ , SeO ₂ .	15
2	Reduction Different reductive processes, Dissolved metal reductions, Birch reduction; Catalytic reductions: hydrogenation using Pd, Ni, Pt, Adam's catalyst, Pearlman catalyst, Lindlar reduction, Rosenmund reduction, Wilkinson reduction, Raney Nickel, hydrogenolysis; Hydride reduction: LiAlH ₄ , LiAlH(Ot-Bu) ₃ , LiAlH(OEt) ₃ , DIBAL, Red-Al, NaBH ₄ , Luche reduction, NaBH ₄ /I ₂ , NaCNBH ₃ , B ₂ H ₆ , LiEt ₃ BH, L-selectride, K-selectride; Wolf-Kishner, Clemmensen, diimide, Staudinger (PPh ₃ /H ₂ O), AIBN-Bu ₃ SnH, Chan reduction, Asymmetric Transfer Hydrogenation (ATH), Asymmetric reduction: CBS, Noyori, Baker-Yeast.	10
3	Pericyclic Reaction: Molecular orbital symmetry and overlapping: Symmetry and Frontier molecular orbitals of π -systems (1,3-butadiene, 1,3,5-hexatriene, allylic cation/anion/radical), MO of cyclopropenyl cation, anion and radical, MO of cycloheptadienyl (Tropylium) cation, anion and radical. Classification of pericyclic reactions, Conservation of orbital symmetry, Woodward-Hoffmann Correlation diagram, Frontier Molecular Orbital (FMO) theory; Electrocyclic reactions: conrotatory and disrotatory motions, 4n, 4n+2 and allyl systems. Cycloadditions: antarafacial and suprafacial additions, 4n and 4n+2 systems, 2+2 addition of ketenes, deMayo Reaction, 1,3-dipolar cycloadditions and cheletropic reactions; Sigmatropic rearrangements; suprafacial and antarafacial shifts of H, sigmatropic shifts involving carbon moieties, 1,3- and 3,3-sigmatropic rearrangements, Various Claisen rearrangement (Johnson, Ireland, Eschenmoser-Claisen, Overman, aromatic), Cope, and Aza-cope, Oxy-cope rearrangements; Ene/group transfer and dyotropic reactions.	15
4	Organic Photochemistry: Electronic excitation, Jablonski diagram & Fluorescence-Phosphorescence, Photo isomerization of alkene, Photochemistry of vision process, Photo-Oxidation of alkenes, Photochemistry of carbonyl compounds—saturated, cyclic and acyclic, β , γ -unsaturated and α , β -unsaturated compounds, Photo-dissociation of ketones- Norrish Type-I & II cleavage, Di-Pi-Methane Rearrangement, Paternò-Büchi Reaction, Lumiketone Rearrangement, Photo-Fries Rearrangement, Barton Reaction, Hofmann-Löffler-Freytag (HLF) reaction.	10
Total		50

Reference & Textbooks:

1. Organic Chemistry: Clayden, Greeves and Warren, Oxford Univ. Press, 2nd Ed (2012).
2. Modern Organic Reactions: H. O. House, W.A. Benjamin. 2nd Ed.(1972)
3. Principles of Organic Synthesis, R.O.C. Norman and J. M. Cox, CRC Press 3rd (2014).
4. Physical Organic Chemistry: Isaacs, N. S. (Prentice Hall, 1996).
5. Stereoelectronic Effects in Organic Chemistry: Deslongchamps, P. (Elsevier Science, 1983).
6. Advanced Organic Chemistry, Part A and B: Carey, F. A., Sundberg, R. J. (Springer, 2007).
7. Modern Molecular Photochemistry: Turro, N. J. (University Science Books, 1991).
8. Modern Physical Organic Chemistry: Anslyn, E. V., Dougherty, D. A. (University Science Books, 2005).
9. Woodward, R. B., Hoffmann, R. The Conservation of Orbital Symmetry, Verlag Chemie, 1970.
10. Orbital Symmetry: A Problem Solving Approach: Lehr, R. E., Marchand, A. P. (Academic Press, 1972).
11. Pericyclic Reactions: S. M. Mukherji, Macmillan, India.
12. Name reactions and Reagents in Organic Synthesis: Bradford P Munday, Michael G. Ellerd and Frank G. Favaloro, Jr. (Wiley Interscience, 2nd Ed)
13. Introductory Photochemistry: A. Cox and T. Camp. McGraw-Hill.
14. Fundamentals of Photochemistry: K. K. Rohtagi-Mukherji, Wiley-Eastern
15. Organic Photochemistry: J. Coxon and B. Halton, Cambridge University Press

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM C202	Course Name: Inorganic Chemistry-II	
Semester: II	Credits: 4	Core Course
Pre-requisites: B Sc. (Hons.) Inorganic Chemistry and C102		
Course Outcome: The student will learn regarding Bonding in Co-ordination Compounds; Spectral and Magnetic Properties of Transition Metal Complexes, Metal-Ligand Equilibria in Solution; Reaction Mechanism of Transition Metal Complexes.		

Course Details

Unit	Contents	Hours/ Semester
1	Bonding in Co-ordination Compounds: Valence bond theory-strength and short comings, Crystal field theory-effect spin types, CFSE, Evidence for crystal stabilization energy in octahedral, tetrahedral, tetragonal, square pyramidal and square planar fields, Applications of Crystal Field Splitting, Jahn-Teller Theorem, Molecular orbital theory (qualitative), MO energy level diagrams, Sigma-pi bonding and their importance in co-ordination compounds	12
2	Spectral and Magnetic Properties of Transition Metal Complexes: Spectroscopic ground states, Correlation and Orgel diagrams for transition metal complexes (d^1 - d^9 states), Tanabe-Sugano <i>diagrams</i> , Charge transfer spectra, Elementary idea about magneto chemistry of metal complexes, Diamagnetism, Para magnetism, Temperature independent paramagnetism, Magnetic susceptibility and its measurement, Paramagnetism applied to metal complexes, Ferromagnetism, Ferrimagnetism and Anti-ferromagnetism.	12
3	Metal-Ligand Equilibria in Solution: Stepwise and overall formation constants, Trends in stepwise constants, Inert and labile complexes, Kinetic application of valence bond and crystal field theories, Kinetics of octahedral substitution, Factors affecting stability of metal complexes with reference to the nature of metal ion and ligand, Chelate effect and its thermodynamic origin, Determination of binary formation constants by pH-metry and spectrophotometry.	12

4	Reaction Mechanism of Transition Metal Complexes: Acid hydrolysis, Factors affecting acid hydrolysis, Base hydrolysis, Conjugate base mechanism, Direct and indirect evidences in favour of conjugate mechanism, Anation reactions, Reactions without metal ligand bond cleavage, Substitution reactions in square planar complexes, Trans effect, Mechanism of one electron reactions, Outer-sphere type reactions, Marcus-Hush theory, Inner sphere type reactions.	12
Total		48

Reference & Textbooks :

1. Advanced Inorganic Chemistry: F. A. Cotton, G. Wilkinson, C. A. Murillo, M. Bochmann, John Wiley and Sons Press, 3rd Ed. (1995).
2. Inorganic Chemistry-Principles of Structure and Reactivity: J. E. Huheey, E. A. Keiter, R. L. Keiter, Harper-Collins, NY, 4th Ed. (1993).
3. Inorganic Chemistry: G. L. Missler and D. A. Tarr, Prentice Hall, 3rd Ed. (2003).
4. *Inorganic Chemistry*: D. F. Shriver, and P. W. Atkins, Oxford University, Oxford, 3rd Ed. (1999).
5. Mechanisms of Inorganic Reactions: F. Basolo and R. G. Pearson, John Wiley & Sons, 2nd Ed. (1967).
6. Inorganic Electronic Spectroscopy: A. B. P. Lever, Elsevier, 2nd Ed. (1984).
7. Magneto-chemistry: R. L. Carlin, Springer-Verlag, (1986).
8. Elements of Magnetochemistry, R. L. Dutta, A. Syamal, Affiliated East-West Press, 2nd Ed. (2004).

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM C203	Course Name: Physical Chemistry-II	
Semester: II	Credits: 4	Core Course
Pre-requisites: B Sc. (Hons.) Physical Chemistry and C103		
Course Outcome: This course will provide the knowledge of thermodynamics and its relation to microscopic physical laws. The last part of this course gives the understanding of mechanism of chemical processes.		

Course Details

Unit	Contents	Hours/ Semester
1	Classical thermodynamics: Brief resume of the concept of internal energy, enthalpy, entropy, free energy, Adiabatic and isothermal processes; laws of thermodynamics: first law, second law, third law; Effect of temperature and pressure on thermodynamics quantities: free energy, entropy, equilibrium constant, The principle of le Chatelier, Partial molar properties, Chemical potential, Determination of partial molar properties by: (1) Direct Method, (ii) Method of intercept; Phase equilibria: Conditions for equilibrium between phases, The phase rule, Systems of one component-water, Thermodynamics of non ideal solution: Concept of fugacity and its determination by (i) Graphical method, (ii) From equation of state (iii) Approximation method.	12
2	Statistical thermodynamics: Thermodynamic probability and entropy, Maxwell-Boltzmann statistics, Partition function (translational, vibrational, rotational and electronic) for diatomic molecules, relationship between partition and thermodynamic function (internal energy, enthalpy, entropy and free energy), Calculation of equilibrium constant, Fermi-Dirac statistics, Bose-Einstein statistics, Distribution law and its application to metal.	12
3	Non-equilibrium thermodynamics: Thermodynamic criteria for non-equilibrium states, Entropy production: heat flow and chemical reaction; Transformation of the generalized fluxes and forces, Non-equilibrium stationary state, Microscopic reversibility, Onsager's reciprocity relation, Electrokinetic phenomena.	12

4	Chemical Dynamics: Collision theory of reaction rate, Activated complex theory, Arrhenius equation, Ionic reaction, Kinetic salt effect, Steady state kinetics, Photochemical reaction (Hydrogen-Bromine and Hydrogen-Chlorine reactions), Oscillatory reactions (Belousov-Zhabotinsky reaction), Homogeneous catalysis, General features of fast reaction, Study of fast reaction by flow method and relaxation method. Dynamics of Unimolecular reactions (Lindemann-Hinshelwood and Rice-Ramsperger-Kassel-Marcus theories)	12
Total		48

Reference & Textbooks :

1. Walter J. Moore, Physical Chemistry, Orient Longman, London 1972..
2. Thermodynamics, Gurdeep Raj, Goel Publishing House, Meerut, India
3. P. W. Atkins, Physical Chemistry, Seventh Edition (2002), Oxford University Press, New York.
4. I.N. Levine, Physical Chemistry, 5th Edition (2002), Tata McGraw Hill Pub. Co. Ltd., New Delhi.
5. Andrew Maczek, Statistical Thermodynamics, (1998) Oxford University Press Inc., New York
6. K. J. Laidler, Chemical Kinetics, Third Edition (1987), Harper & Row, New York
7. Paul L. Houston, Chemical Kinetics and Reaction Dynamics, Dover Publications, New York.
8. J. Raja Ram and J.C. Kuriacose, Kinetics and Mechanism of Chemical Transformations (1993), MacMillan Indian Ltd., New Delhi.
9. P.K. Nag. Basic and applied thermodynamics, Tata McGraw Hill Pub. Co. Ltd., New Delhi.
10. S.R. De Groot and P. Mazur, Non-equilibrium thermodynamics, Dover Publications, Inc. New York
11. Donald A. McQuarrie and John D. Simon, Physical Chemistry A Molecular Approach, USA.
12. Thomas Engel and Philip Reid, Physical Chemistry, Pearson, New York.
13. Andrew Cooks, Physical Chemistry, Thermodynamics, Statistical Mechanics, & Kinetics, Pearson, New York.

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, mock test, assignment, doubt clearing class, Assignments.

Course No. CHEM C204	Course Name: Organic Spectroscopy	
Semester: II	Credits: 4	Core Course
Pre-requisites: B. Sc. Organic Chemistry, CHEM C101		
Course Outcome: The student will learn how to identify and characterize organic molecule through organic spectroscopy. The student should be able to know application of spectroscopy for unknown compound identification, structural elucidation by Combined UV, IR, Mass and NMR spectroscopy.		

Course details:

Unit	Contents	Hours/ Semester
1	UV spectroscopy: Various electronic transitions (185–800 nm), Jablonski diagram, Beer–Lambert Law, effect of solvent on electronic transitions, ultraviolet bands for carbonyl compounds, unsaturated carbonyl compounds, dienes, conjugated polyenes. Woodward-Fieser rules (for conjugated dienes and carbonyl compounds) & Fieser-Kuhn rule (for polyenes), UV spectra of aromatic and heterocyclic compounds. IR spectroscopy: Theory & principle of IR spectroscopy, Modes of stretching and bending, Fourier Transform Spectrometers, Background spectrum, Survey of important functional groups with examples, Effect of hydrogen bonding and solvent effect on vibrational frequencies, overtones, combination bands and Fermi resonance, FTIR.	10
2	Nuclear Magnetic Resonance: Physical basis of Nuclear Magnetic Resonance spectroscopy, Basic principle, shielding mechanism, Chemical shift and Spin-spin coupling as functions of structure, Karplus curve- variation of coupling constant with dihedral angle, effect of deuteration, Hydroxyl proton exchange and influence of Hydrogen bonding on chemical shift, anisotropy, spin-spin splitting, complex spin-spin interaction between two, three, four and five nuclei (first order spectra), effect on Analysis of high-resolution NMR spectra, FT and pulse-NMR, ¹⁹ F and ³¹ P NMR, Nuclear Overhauser effect (NOE). Carbon-13 NMR Spectroscopy: General considerations, chemical shift, coupling constants. Spin-spin, spin-lattice relaxations, Off resonance decoupling, DEPT, Interpretation of simple ¹³ C-NMR spectra. 2D NMR: (COSY, INADEQUATE, DEPT, HMQC, HSQC, HMBC, NOESY)	15

3	Mass spectroscopy: Principles of Mass Spectrometry, Molecular ion peak, Metastable ions, McLafferty rearrangement, Nitrogen rule. Ion sources (EI, CI, Field Ionization, FAB, Plasma desorption, Field desorption, Laser desorption, MALDI, Thermospray, API, ESI, Atmospheric pressure secondary ion mass spectrometry, inorganic ionization techniques, formation and fragmentation of ions, fragmentation reactions, Mass analyzers, Ion cyclotron resonance and FT-MS.	10
4	Structure elucidation: Application of IR, UV-Visible, $^1\text{H-NMR}$, $^{13}\text{C-NMR}$, Mass spectroscopic techniques for structure elucidation & determination of organic compounds with exhaustive examples.	10
Total		45

Reference & Textbooks:

1. Introduction to Spectroscopy, Donald L. Pavia, Gary M. Lampman, George S. Kriz, James A. Vyvyan (4th Edition, Brookes Cole, 2008).
2. NMR spectroscopy, Basic principles, concepts, and applications in chemistry, Harald Gunther (2nd Ed., Wiley, 2001) (reprint)
3. High Resolution NMR Techniques in Organic Chemistry Timothy Claridge (2nd Ed. Elsevier, 2009)
4. Mass Spectrometry, Principles and applications, Edmond de Hoffmann, Vincent Stroobant (3rd Edition, Wiley, 2007)
5. Spectrometric identification of organic compounds, Robert M. Silverstein, Francis X. Webster, David Kiemle: (7th Edition, Wiley, 2005).
6. Organic Chemistry: Clayden, Greeves and Warren, Oxford Univ. Press, 2nd Ed (2012).
7. Spectroscopy of Organic Compounds, P. S. Kalsi, (8th Ed, New Age Publishers)

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM P205	Course Name: Organic Practical	
Semester: I	Credits: 6	Core Course
Pre-requisites: CHEM C101, CHEM C201, CHEM C204		
Course Outcome: This is a basic organic chemistry practical course. In this laboratory course, students would be able to use their knowledge of chemical reactivity to plan and execute the preparation of compounds using various C-C and C-hetero bond-forming reactions and various organic transformations from commercially available starting materials. Upon completion of this laboratory course, the students would also get confidence on working independently and characterize the synthesized compounds using various modern techniques.		

Course Details

Unit	Contents	Hours/ Semester
1	R_f determination & Mixture separation by TLC: <ol style="list-style-type: none"> 1. Preparation of TLC stains and their application in chromatographic technique. 2. Determination of R_f Value of binary and ternary mixtures and number of component by TLC 3. Separation of organic mixtures (binary/ternary) by column chromatography 	22
2	Oxidation-reduction & nitration method: <ol style="list-style-type: none"> 4. Preparation of amide: Synthesis of p-nitroacetanilide from acetanilide. 5. Reduction of ketone: Preparation of benzhydrol from benzophenone using NaBH₄ 6. Oxidation of olefin with KMnO₄: Preparation of adipic acid from cyclohexene 7. Preparation of pyridinium chlorochromate (PCC) and its use for the oxidation of an suitable alcohol 	26

3	8. Aldol reaction: Preparation of dibenzylideneacetone 9. Etherification of alcohol: Preparation of 2-ethoxynaphthalene 10. Hydrolysis of ester: Preparation of salicylic acid from methyl salicylate 11. Preparation of: ethylbenzoate/ Anthranilic acid/Methyl Orange/azo-dye. 12. Beckmann rearrangement: Preparation of benzanilide from benzophenone oxime.	26
4	Isolation/separation: 13. Isolation of lycopene from tomatoes // carotene from carrots 14. Isolation of piperine from black pepper // casein from milk 15. Separation: mixture of toluene and o-toluidine // benzene and o-toluidine // ether and hydrocarbon // o-cresol and benzoic acid.	22
Total		96

Reference & Textbooks:

- 1) Quantitative and Qualitative analysis By A. I. Vogel
- 2) Experiments and Techniques in Organic Chemistry, D.Pasto, C. Johnson, & M.Miller, Prantice Hall.
- 3) Systematic Qualitative Organic Analysis, H. Middleton, Edward Arnold (Publisher).
- 4) Hand Book of Organic Analysis, Qualitative & Quantitative, M.T. Clarke, Edward Arnold (Publisher).
- 5) Vogel's Text Book of Practical Organic Chemistry, A.R. Tatchell, John Wiley.
- 6) Macroscale and Microscale Organic Experiments, K. L. Williamson, D. C. Heath.
- 7) A Text Book of Practical Organic Chemistry (Qualitative). Arthur I. Vogel.

Assessment and Expectations from Class: Tutorial, Quiz, Endsem-100, attendance, Punctuality, doubt clearing class.

Course No. CHEM VAC1	Course Name: Materials Characterization	
Semester: II		Value Added Course
Pre-requisites: C104, C202, C204		
Course Outcome: The course aims to give the theory and hands-on-training of the instruments facilities available at Berhampur University. This will help the students to understand the spectroscopic techniques required for characterization of materials synthesized in laboratory.		

Course Details

Unit	Contents	Hours/ Semester
1	UV-visible spectroscopy: Baseline correction with suitable solvent, blanking the instrument, determination of suitable concentration, quantitative measurement of sample of different concentration. Kinetic measurement of reaction to determine rate constant, spectral measurement of different compounds, data export in different format and plotting in origin.	10
2	Photoluminescence spectroscopy: Determination of excitation and emission peak for unknown sample, choosing right filter for correct measurement, using solid sample as well as solution sample, measurement in fluorescence and phosphorescence mode for lanthanide doped sample as well as organic molecules. Life time measurement and calculation of life time in single and double exponential plotting in origin. Data export and plotting in origin. Other tips in PL measurement.	10
3	X-Ray Diffraction Studies: Basic principles, Baseline correction, Crystal structure determination, Calculation of crystallite size from XRD data, Insertion of negative hkl indices in XRD graph, calculation of lattice parameters, Data export, plotting in origin and interpretation.	10
4	Magnetic susceptibility Measurement: Elementary idea about magnetic properties of metal complexes, Determination of magnetic susceptibility of transition metal complexes, Data export, plotting in origin and interpretation.	10
Total		40

Reference & Textbooks :

1. Modern Spectroscopy, J. M. Hollas, John Wiley, 4th edition, 2004, Sussex.
2. Donald L. Pavia, Gary M. Lampman, George S. Kriz, James A. Vyvyan: Introduction to Spectroscopy, 4th Edition, Brookes Cole, 2008.
3. Magneto-chemistry: R. L. Carlin, Springer-Verlag, (1986).
4. X-Ray Diffraction Crystallography: Introduction, Examples and Solved Problems: Y. Waseda, E. Matsubara, K. Shinoda, Springer-Verlag Berlin Heidelberg 2011.

SEMESTER-III

Course No. CHEM C301	Course Name: Physical Organic Chemistry	
Semester: IV	Credits: 4	Core Course
Pre-requisites: C101, C201		
<p>Course Outcome: This course gives an in-depth understanding of a broad range of organic reactions from physical organic chemistry perspective. The topics include thermodynamic & kinetic control of organic reactions, Curtin-Hammett Principle, probing the reaction mechanisms by kinetic isotope effects, stereoelectronic effects in conformations, allylic strain and various selected reactions. Also, a detailed study and application of the theories/rules governing various cyclic reactions will be carried.</p>		

Course details:

Unit	Contents	Hours/ Semester
1	Chemical Equilibria and Chemical Reactivity: Thermodynamic and kinetic control of reactions; Correlation of reactivity with structure, linear free energy relationships, Hammond's postulate, Curtin-Hammett principle, substituent constants and reaction constants.	10
2	Stereoelectronic Effects in Organic Chemistry: Role of stereoelectronic effects in the reactivity of acetals, esters, amides and related functional groups; Reactions at sp ³ , sp ² , and sp carbons, Cram, Felkin-Ahn, Zimmerman-Traxler, Houk, Cieplak, exterior frontier orbital extension (EFOE) and cation-complexation models as applied to p-facial stereoselectivity.	10
3	Molecular strains: Strain thermodynamics, various kinds of strains, ring strains, torsional strain, Allylic strain (A ^{1,2} and A ^{1,3}) and other strains, Taft equation. Baldwin's rule of cyclization. Concept of aromatic, non-aromatic and anti-Aromaticity.	10
4	Chemical Kinetics and Isotope Effects: Various types of catalysis and isotope effects, importance in the elucidation of organic reaction mechanisms vide isotope labellings.	10
Total		40

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Reference & Textbooks:

- Physical Organic Chemistry: Isaacs, N. S. (Prentice Hall, 1996).
- Stereoelectronic Effects in Organic Chemistry: Deslongchamps, P. (Elsevier Science, 1983).
- Advanced Organic Chemistry, Part A and B: Carey, F. A., Sundberg, R. J. (Springer, 2007).
- Modern Molecular Photochemistry: Turro, N. J. University Science Books, 1991.
- Modern Physical Organic Chemistry: Anslyn, E. V., Dougherty, D. A. University Science Books, 2005.
- The Conservation of Orbital Symmetry: Woodward, R. B., Hoffmann, R. Verlag Chemie, 1970.
- Orbital Symmetry: A Problem Solving Approach: Lehr, R. E., Marchand, A. P., Academic Press, 1972.

Course No. CHEM E302	Course Name: Advanced Organic Synthesis	
Semester: III	Credits: 4	Elective Course
Pre-requisites: C101, C201, C204		
<p>Course Outcome: The student will learn about disconnection approach, retrosynthesis, synthetic strategy for synthesis of heterocycles, total synthesis of natural products, target molecules synthesis. The student can independently plan to design the schemes for the syntheses of target molecules and execute the strategy using various reagents to synthesize the target molecules.</p>		

Course Details

Unit	Contents	Hours/ Semester
1	<p>Disconnection approach and Retrosynthesis: Art and science of total synthesis of natural and designed molecules. Introduction to the technical terms: Total Synthesis, Formal Synthesis, Linear synthesis, Convergent synthesis etc. The basis for retrosynthetic analysis and terminologies, Synthons and synthetic equivalents, Strategies for disconnection, disconnection approach, functional group interconversions. One group C-X and two group disconnections in 1,2-, 1,3-, 1,4- & 1,5-bifunctional compounds, Chemoselectivity, reversal of polarity- Umpolung, cyclization reaction, Disconnection approach for amines, alcohols, ethers, sulphides etc. Disconnection approach for carbonyl compounds and regioselectivity.</p> <p>Protecting Groups: Principles of protection and deprotection of functional groups, Protection of alcohol (Silyl, THP, benzyl, PMB, MOM etc.), diols (acetal, ketal, carbonates etc.), amine (Boc, Cbz, Fmoc etc.) carbonyl (acetal, ketal etc.), carboxyl (as ester, benzyl ester etc.) and their deprotection with suitable reagents; Selective protection and deprotection of various functional groups.</p>	12
2	<p>Heterocycles: Synthesis of saturated heterocycles, synthesis of 3-, 4-, 5- and 6-membered rings (1 or 2 hetero atom). Paal-Knorr synthesis of pyrrole, furan & thiophene. Aromatic heterocycles in organic synthesis. Synthesis of indole, pyrazole, pyridine, quinoline, isoquinoline, imidazoles, diazines. Fischer Indole synthesis, Skraup synthesis, Hantzsch Pyridine synthesis.</p> <p>Total synthesis: Synthesis of Hirsutene, Ingenol, Artemisinin, Longifolene, Prostaglandin F_{2α}, Imatinib, Remdesivir. Flavipiravir, Ribavirin, Aspirin, L-DOPA, Salbutamol, Saccharin.</p>	15
3	<p>Reagents in Organic Synthesis (ROS): Gilman reagent, LDA, n-BuLi, t-BuLi, NaHMDS, KHMDS, t-BuOK, DCC, Yamaguchi esterification, TMSI, Dioxirane, Criegee reagent Pb(OAc)₄, NaIO₄, CH₂N₂, SeO₂, NBS, Bu₃SnH-AIBN, OsO₄. ADMix-α, ADMix-β, Prevost & Woodward reagents, Corey-Fuch, Ohira-Bestmann, Seyferth-Gilbert, Simon-Smith, Peterson Olefination, Julia Olefination, Horner Wittig, Wacker oxidation, Petasis reagent (Petasisolefination), Grubbs catalyst & RCM, Phase Transfer Catalyst (PTC), DDQ, Barton decarboxylation, sulphur ylide, azomethine ylide, Keck Asymmetric allylation, Evans Oxazolidinone and Evans Aldol, Wenreb amide, Fetizon reagent (Ag₂CO₃/Celite), Vilsmeier-Haack reagent, Kulin-Kovich cyclopropanation reagent, Martin sulfurane, Mitsunobu (PPh₃/DEAD), PPA, Et₂NSF₃(DAST).</p>	13
4	<p>Asymmetric synthesis: Definition, Stereospecific, Stereoselective – enantioselective and diastereoselective. Importance of asymmetric synthesis, enantioselective and diastereoselective transformations. Reactions using Chiral Lewis Acids and Brønsted Acids, Asymmetric oxidation reactions (Epoxidations, Dihydroxylations, aminohydroxylations), Asymmetric reduction reactions (CBS, Noyri, Transfer Hydrogenation, Baker's Yeast), Allylations (Keck, Roush, Leighton), Enantioselective Aldol reactions, Brief idea on organocatalysis (Proline catalyzed aldol reaction), Kinetic resolution.</p>	10
Total		50

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Reference & Textbooks:

- 1) Organic Chemistry: Clayden, Greeves & Warren Oxford Univ. Press, 2nd Ed (2012).
- 2) Organic Synthesis: The Disconnection Approach. S. Warren, Paul Waytt, Wiley, Second Ed (2008)
- 3) Classics in Total Synthesis: Targets, Strategies, Methods; K. C. Nicolaou & E. J. Sorensen. Wiley-VHC Publishers
- 4) Classics in Total Synthesis-II: Targets, Strategies, Methods; K. C. Nicolaou & S. A. Snyder. Wiley-VHC Publishers

- 5) Logics in Chemical Synthesis: E. J. Corey, E. J. Corey and Xue-Min Cheng, Wiley & Sons
- 6) Green's Protective groups in Organic Synthesis: Peter G. M. Wuts, Wiley 5th Ed (2014)
- 7) Heterocyclic Chemistry: J. A. Joule and K. Mills, Wiley, 5th Edition, 2010
- 8) Advanced Organic Chemistry: F. A. Carey and R. J. Sundberg, Part A and B Springer, 5th Ed. (2005)
- 9) A Guide Book of Mechanism in Organic Chemistry: Peter Sykes, Longman.6th Ed.(1999)
- 10) Structure and Mechanism in Organic Chemistry: C. K. Ingold, Cornell University Press, 3rd (1957).
- 11) Organic Chemistry: R. T. Morrison and R. N. Boyd, Prentice-Hall, 6th Ed.(1992)
- 12) Designing Organic Synthesis, A programmed introduction to synthon approach: S. Warren, Wiley.
- 13) Organic Synthesis-Concept, Methods and Starting Materials: J. Fuhrhop and G. Penzillin, VCH, Weinheim, Germany.
- 14) Some Modern Methods of Organic synthesis: W. Carruthers, Cambridge Univ. Press.
- 15) Advanced Organic Chemistry: Reactions, Mechanisms and Structure, J. March, Wiley.
- 16) Principles of Organic synthesis, R. Norman and J. M. Coxon, Blackie Academic & Professional.
- 17) Name reactions and Reagents in Organic Synthesis 2nd Ed, Bradford P Munday, Michael G. Ellerd and Frank G. Favaloro, Jr. Wiley Interscience

Course No. CHEM E303	Course Name: Organometallic Chemistry	
Semester: III	Credits: 4	Elective Course
Pre-requisites: C102, C202		
Course Outcome: The student will learn about Main Group Organometallics; Transition Metal Organometallics and Applications of Organometallics to Organic Synthesis and Catalysis.		

Course Details

Unit	Contents	Hours/ Semester
1	Main Group Organometallics: Synthesis and reactions of organolithium compounds; Synthesis and reactions of organomagnesium compounds; Organometallics of zinc and mercury: preparation, structure, bonding and reactions of aluminum organyls; Thallium(I) organyls (synthesis of TlCp); Organyls of sodium, synthesis of NaCp; Silicon and tin organyls of coordination number 4.	12
2	Transition Metal-Carbon σ-Bond: Metal alkyl complexes: Synthesis, stability and structure; Reactions; Activation of C-H bonds.; transition metal carbene, carbyne, vinylidene and allenylidene complexes: Synthesis; structure and bonding and reactivity	12
3	Transition Metal-Carbon π-Bond: (a) Alkene complexes: Synthesis, bonding, reactivity (b) Alkyne complexes: Synthesis, bonding, reactivity (c) Cyclopropenyl cation ($C_3R_3^+$) as a ligand; C_4R_4 as a ligand (R = H, Me, Ph). (d) Cyclopentadienyl complexes: discovery, bonding and properties of Cp complexes of 3d metals; Substituted metallocenes; Half and bent sandwich complexes (e) Allyl and dienyl complexes: synthesis; structure and reactivity (f) Arene complexes: Bis-arene complexes; Arene half-sandwich complexes; η^2 to η^4 coordinated arenes; η^6 -arene-chromium tricarbonyl in organic synthesis; Seven and eight-membered ring ligands	16
4	Applications to Organic Synthesis and Catalysis; Stiochiometric reactions for Organometallic catalysts: Dissociation & Substitution, Oxidative addition & carbonylation, Oxygen transfer from Peroxo and Oxo Species, Reductive & Hydride elimination, Insertion reaction, nucleophilic and electrophilic attack on coordinated ligands, Isomerization reaction, Hydrogenation, Hydrosilation and Hydrocyanation of unsaturated compounds, Hydroformylation, Wacker (Smidt) Process, Olefin Metathesis, Fischer-Tropsch synthesis, Zeigler-Natta polymerization, Water gas reaction	16
Total		56

Reference & Textbooks:

1. Inorganic Chemistry-Principles of Structure and Reactivity: J. E. Huheey, E. A. Keiter, R. L. Keiter, Harper-Collins, NY, 4th Ed. (1993).
2. Organometallic Chemistry: A Unified Approach R. C. Mehrotra & A. Singh, New Age International, 2nd Ed. (2000).
3. The Organometallic Chemistry of the Transition Metals: R. H. Crabtree, John Wiley 3rd Ed. (2001).
4. Basic Organometallic Chemistry: Concepts, Synthesis and Applications B. D. Gupta & A. J. Elias, Springer Science, 2nd Ed. (2013).
5. Organometallics 1, M. Bochmann, Oxford University Press, New York (1994).
6. Organometallics 2, M. Bochmann, Oxford University Press, New York (1994).

Assessment and Expectations from Class: Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments

Course No. CHEM E304	Course Name: Analytical Chemistry	
Semester: III	Credits: 4	Elective Course
Pre-requisites: B. Sc. Chemistry (Hons.)		
Course Outcome: The student will learn the practical knowledge for Qualitative analysis of mixtures containing not less than six radicals, volumetric estimation of metal including magnetic state determination and preparation of inorganic metal complexes.		

Course Details

Unit	Contents	Hours/ Semester
1	Thermal methods of analysis: Thermo analytical methods: TGA, DTGA and DTA, Instrument, Instrumental and application to physical studies (reaction kinetics and information for the constitution of phase diagram), Analytical applications, Separation of Ca, Sr, and Ba comparison of purity.	10
2	Electrical methods of analysis: Voltametry and polarography: Dropping mercury electrode, Ilkovic equation, Current-potential curves, Reversible reactions, The residual current, Current maxima, Analytical applications, Amperometric titration using rotating platinum electrode, Cyclic voltammetry.	10
3	Atomic absorption spectroscopy: Atomic Absorption spectroscopy-Principle, difference between atomic absorption spectrophotometry and flame emission spectroscopy, Advantages of Atomic Absorption spectroscopy, Instrumentation, Detection limit and sensitivity. Flame photometry, principle, Instrumentation interference in flame photometry, Application.	10
4	Chromatography: Definition and classification of chromatography, Chromatography terminology. Theory of chromatographic migration, thin layer chromatography, Principle and preparation of TLC plate, choice of adsorbent and solvent system, experimental techniques and application of TLC. Ion exchange mechanism of ion exchange, technique of ion exchange and application of ion exchange for separations, Gel permeation chromatography, Electrophoresis, its apparatus and methodology	10
Total		40

Reference & Text books:

1. Instrumental methods of chemical analysis, Gurdeep R. Chatwal and Sham K. Anand, Himalaya Publishing House, New Delhi.
2. Instrumental Methods of Analysis, . H.HWillard, L.L. Merritt , J.A. Dean and F.A. Settle, CBS publishers, new Delhi.
3. Chromatography: Fundamentals and applications of chromatography and related, E. Heftmann, Elsevier, Amsterdam.

4. Atomic Absorption Spectrometry, Bernhard Welz, Michael Sperling, Wiley, New York.
5. Analytical Chemistry, Dhruva Charan, Dash, PHI learning Private limited, New Delhi.

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments

Course No. CHEM E305	Course Name: Nanochemistry	
Semester: III	Credits: 4	Elective Course
Pre-requisites: B. Sc. Chemistry and M. Sc. I-II courses		
Course Outcome: This course will give basic concept of nano particles and nanotechnology and its applications.		

Course Details

Unit	Contents	Hours/ Semester
1	Introduction to nano scale Science and Technology: Nanotechnology, Classification of nanostructures, Summary of the electronic properties of atoms and solids: The isolated atom – Bonding between atoms - Giant molecular solids - The free electron model and energy bands - Crystalline solids -Periodicity of crystal lattices - Electronic conduction; Effects of the nanometre length scale - Changes to the system total energy - Changes to the system structure - How nanoscale dimensions affect properties- Fabrication methods: Top-down processes, Bottom-up processes, Methods for templating the growth of nanomaterials, Ordering of nanosystems	10
2	Synthesis and Stabilization of Nano particles: Chemical Reduction; Reactions in Micelles, Emulsions; Photochemical and Radiation Cryochemical Synthesis: Physical Methods; Particles of Various Shapes and Films.	10
3	Experimental Techniques: Electron Microscopy: Transmission electron microscopy (TEM), Scanning electron microscopy (SEM): Diffraction Techniques: X-ray diffraction, Neutron diffraction and some miscellaneous Techniques: X-ray fluorescence spectroscopy, UV- visible spectroscopy	10
4	Applications of Nanoparticle: Catalysis on Nano particles, Semiconductors, Sensor, Electronic Devices, Photochemistry and nanophotonics, Application of Carbon Nano tubes, Nanochemistry in Biology and Medicine	10
Total		40

Reference & Text books:

1. Nanomaterials and Nanochemistry, Br'echignac C., Houdy., and Lahmani M. (Eds.) Springer Berlin Heidelberg New York. 2007.
2. Nanoscale Science and Technology, Robert W. Kelsall, Ian W. Hamley and Mark Geoghegan, John Wiley & Sons, Ltd., UK, 2005.
3. Introduction to Nanotechnology, Charles P. Poole Jr and Frank J. Owens, Wiley Interscience, 2003.
4. Bio-Inspired Nanomaterials and Nanotechnology, Edited by Yong Zhou, Nova Publishers.
5. Nano:The Essentials: Understanding Nanoscience and Nanotechnology, T.Pradeep, Tata McGraw-Hill Publishing Company Limited, New Delhi, 2008.
6. Nanoparticle Technology Handbook. M. Hosokawa, K. Nogi, M. Naito and T. Yokoyama (Eds.) First edition 2007. Elsevier
7. Nanotechnology Basic Calculations for Engineers and Scientists. Louis Theodore, John wiley & sons, inc., publication, 2006.

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM CT300	Course Name: Environmental Chemistry	
Semester: III	Credits: 4	Elective Course
Pre-requisites: Basic knowledge of Environment		
Course Outcome: The student will learn the basics of Environment and different types of pollutants in the environment		

Course Details

Unit	Contents	Hours/ Semester
1	Environmental Processes Environment and its classification, Environmental Impact Assessment and management, Factors influencing environment, Components of Environment; Environmental degradation, Biogeochemical cycles; Hydrological cycle, Gaseous cycles (Oxygen cycle, CO ₂ cycle, Nitrogen cycle), Sedimentary cycles (Sulfur cycle, Phosphorous cycle)	10
2	Natural Resources Introduction, classification of resources; land resources , formation of soil, soil erosion, Water resources, Sources of fresh water, Uses of water, causes for the depletion of water resources ;mineral resources, Forest resources, Deforestation, consequences of deforestation; affords to control deforestation, Renewable and nonrenewable resources, Conventional and nonconventional energy resources	10
3	Environmental pollution Introduction, Pollutants, Types of pollutants, Classification of pollution, effects of pollution, Radiation pollution: sources, effect and control of radiation pollution, Thermal pollution: sources, effects and its control, Industrial pollution, Sewage and sewage treatment	10
4	Air Pollution and its control Atmosphere; structure and composition of atmosphere, Classification of air pollutants, Consequences of air pollution (Ozone layer depletion, Greenhouse effect, Global climate, Smog, Acid rain) , Control of air pollution, air quality and standards.	10
Total		40

Reference & Text books:

1. Environment and Ecology: Dr. Sunakar Panda
2. Environmental Chemistry: A.K. De
3. Air Pollution: Wark & Werner
4. Environmental Pollution Control in Process Industries: S.P. Mahajan
5. Environmental Chemistry: B.K. Sharma & H.Kaur
6. Introduction to Air Pollution: P.K. Trivedi
7. Environmental Pollution Analysis: By S.M. Khopkar
8. A Text Book of Environmental Pollution: D.D. Tyagi, M. Mehre
9. Environmental Pollution Engineering and Control: C.S. Rao

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments

Course No. CHEM P306	Course Name: Inorganic Practical	
Semester: II	Credits: 6	Core Course
Pre-requisites: CHEM C102, C202		
Course Outcome: The student will learn the practical knowledge for preparation of inorganic metal complexes, estimate the various ions present in metal complexes, use of EDTA in volumetric analysis and complete analysis of brass, cement and chromo ion ore.		

Course Details

Chapter/ Unit	Contents	Hours/ Semester
1	Preparation and characterization of i) Nickel (II) complexes: $[\text{Ni}(\text{NH}_3)_6]\text{Cl}_2$, $[\text{Ni}(\text{en})_3]\text{Cl}_2 \cdot 2\text{H}_2\text{O}$, $[\text{Ni}(\text{en})_2]\text{Cl}_2 \cdot 2\text{H}_2\text{O}$ ii) <i>cis</i> and <i>trans</i> Cobalt(III) complexes: <i>trans</i> - $[\text{CoCl}_2(\text{en})_2]\text{Cl}$, <i>cis</i> - $[\text{CoCl}_2(\text{en})_2]\text{Cl}$ iii) Bis(acetylacetonato)oxovanadium (IV), $[\text{VO}(\text{acac})_2]$ iv) <i>bis</i> -chloro- <i>bis</i> -triphenyl phosphine nickel (II): $[\text{NiCl}_2(\text{PPh}_3)_2]$	24
2	i) Analysis of Ni in Tris(ethylenediamine)nickel(II) chloride, $[\text{Ni}(\text{H}_2\text{NC}_2\text{H}_4\text{NH}_2)_3]\text{Cl}_2$ ii) Analysis of Mn in Calcium manganate, $[\text{Ca}_2\text{MnO}_4]$ iii) Analysis of Fe and $[\text{C}_2\text{O}_4]^{2-}$ in Potassium trisoxalato ferrate(III) trihydrate, $\text{K}_3[\text{Fe}(\text{C}_2\text{O}_4)_3] \cdot 3\text{H}_2\text{O}$ iv) Analysis of Cu in Copper(I) tetraiodomercurate(II), Cu_2HgI_4 v) Analysis of cobalt in Chloropentamminecobalt(III) chloride, $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}_2$ vi) Analysis of Fe and $[\text{C}_2\text{O}_4]^{2-}$ in Potassium bis(oxalato)cuprate(II) dihydrate, $\text{K}_2[\text{Cu}(\text{C}_2\text{O}_4)_2] \cdot 2\text{H}_2\text{O}$	36
3	Volumetric analysis involving EDTA as reagent. i) Determination of Ca^{2+} and Mg^{2+} in Dolomite. ii) Determination of Nickel in Stainless steel.	12
4	Complete analysis of: i) Brass ii) Cement iii) chromo iron ore.	18
Total		90

Reference & Textbooks:

1. Practical inorganic chemistry, G. Pass and H. Sutcliffe, Chapman & Hall, 2nd Ed., 1974.
2. Advanced practical inorganic chemistry, D. M. Adams and J. B. Raynor, John Wiley & Sons, 1967.
3. Experimental inorganic chemistry, R. E. Dodd and P. L. Robinson (Elsevier), 1957.
4. Text book of quantitative inorganic analysis. I. Vogel, 4th Ed. (revised), ELBS publications, 1978.

Assessment and Expectations from Class: Endsem-100, attendance, Punctuality, doubt clearing class.

Course No. CHEM VAC2	Course Name: Chemistry and Society	
Semester: III		Value Added Course
Pre-requisites: If any		
Course Outcome: The course aims to give the students a brief idea about applications of Chemistry in food, medicine, agriculture as well as in daily life. In addition to theory, students will be given hands-on training on preparation of soap, detergent, sanitizer, etc.		

Course Details

Unit	Contents	Hours/ Semester
1	Chemistry in food: Carbohydrates: Classification, sugar and non-sugar, Glucose, fructose, starch and cellulose. Importance of carbohydrates. Proteins & amino acids: Classification, essential and nonessential amino acids and their importance, Zwitter ion structure, Proteins: classification and function. Lipids: Classification, oils and fats, metabolism of lipids. Vitamins: Classification, Nomenclature and disease caused by the deficiency of vitamins.	10
2	Chemistry in Medicines: Development of new drugs, Different types of general drugs, analgesics, antipyretics, antiseptics and antibiotics, broad spectrum antibiotics. Metals in medicines: Metal deficiency and disease, toxic effect of metals.	10
3	Chemistry in Agriculture: Fixation of Nitrogen, Fertilizers: classification of fertilizers- nitrogenous, phosphorous and potassium fertilizer. Pesticides: classification- insecticides, fungicides and rodenticides. Detrimental effects of pesticides (DDT, BHC, Parathion).	10
4	Chemistry in daily life: General idea on soap, detergents, sanitizers, shampoo, cosmetics and perfumes used in daily life. Advantage and disadvantage of synthetic detergent, Detrimental effects plastics on environment and measures to minimize plastic uses in daily life. Practical (Hands-on-experience): Preparation of soaps, detergents, hand sanitizers and extraction of curcumin from turmeric, Preparation of common medicinal molecule: paracetamol/Aspirin/methyl salicylate.	10
Total		40

Reference & Textbooks:

1. Chemistry in Context: Applying Chemistry to Society, 9th Ed, American Chemical Society, ISBN 9781260222029.
2. Aurand, L. W. and Wood, A. E. (1973). Food Chemistry. The AVI Publishing Co., Connecticut.
3. Belitz, H. D., Grosch, W. and Schieberler, P. (2004). Food Chemistry. Springer, Berlin.
4. DeMan, J. M. (1999). Principles of Food Chemistry. A Chapman and Hall Food Science Book, Aspen Publ., Inc., Gaithersburg, Maryland.
5. Fennema, O. R. (ed). (1996). Food Chemistry. Marcel Dekker, Inc., New York
6. Meyer, L. H. (1976). Food Chemistry. Reinhold Publ. Corporation, New York.
7. Potter, N. M. (1995). Food Science. The AVI Publishing Co., Connecticut.
8. Chemistry and Medicines: An Introductory Text, James R Hanson; RSC.
9. Textbook of Agro-Chemistry by H. P. Hegde, Discovery Publishing Pvt. Ltd (2009).

SEMESTER-IV

Course No. CHEM C401	Course Name: Physical Chemistry-III	
Semester: IV	Credits: 4	Core Course
Pre-requisites: C103, C203		
Course Outcome: This course gives an in-depth understanding of various aspects of Electrochemistry, Surfactants, Micelles. In addition, it also gives various aspects of X-ray diffraction studies		

Course Details

Unit	Contents	Hours/ Semester
1	Electrochemistry-I: Ion-solvent interactions, Born Model, Ion-ion interactions, Debye-Huckel (ion-cloud) model, Bjerrum Model of ions association, Structure of electrified interfaces, Thermodynamics of electrified interface; Electrocapillarity: Lippmann equations, Over potential, Butler Volmer equation, Tafel plot.	10
2	Electrochemistry-II: Electrolytic conductance, transport number and its determination, Kohlrausch's law and application to determine solubility; degree of dissociation; Activity and activity coefficient, Ionic strength, Debye-Huckel limiting law, Debye Huckel-Onsager equation and its verification; Nernst equation: single, standard electrode potential, application of potential measurement; Conductometric and potentiometric titrations.	10
3	Surface Chemistry: Adsorption, Freundlich and Langmuir adsorption isotherm, Surface tension, Capillary action, Pressure difference across curved surface (Laplace equation), Vapour pressure of droplets (Kelvin equation), Gibb's adsorption isotherm, Estimation of surface area (BET equation); Colloidal solution, properties of colloidal; Microemulsion, micelles, Reverse micelles Thermodynamics of micellization, Phase separation and mass action models.	10
4	Solid state: Crystal systems and lattices, Miller planes, Schottky defect, Frenkel defect, Color centre; line defect: Edge dislocation, screw dislocation, Extended defect: Stacking faults, subgrain boundaries and antiphase domains; Bragg's Law, Band theory.	10
Total		40

Reference & Text books:

1. J.O'M. Bockris and A.K.N. Reddy, Modern Electrochemistry, Vol. 1 & 2A and 2 B, (1998) Plenum Press, New York.
2. Y. Moroi, Micelles : Theoretical and Applied Aspects, (1992) Plenum Press, New York.
3. F.W. Billmeyer, Jr., Text Book of Polymer Science, 3rd Edition (1984), Wiley-Interscience, New York.
4. A.R. West, Solid State Chemistry and its Applications, (1984) John Wiley & Sons, Singapore.
5. S. Glasstone. An introduction to electrochemistry, Macmillan.
6. Richard M. Pashley and Marilyn E. Karaman, Applied Colloid And Surface Chemistry, John wiley and sons, England
7. Hans-Jürgen Butt, Karlheinz Graf, Michael Kappl, Physics and Chemistry of Interfaces, Wiley VCH, Weinheim.
8. Walter J. Moore, Physical Chemistry , Orient Longman, London 1972..
9. Gordon M Barrow, Physical Chemistry, Tata Mcgraw-Hill, New Delhi.,

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments

Course No. CHEM E402	Course Name: Bio-organic Chemistry	
Semester: IV	Credits: 4	Elective Course
Pre-requisites: C101, C201, C301, E302		
Course Outcome: The student will learn about the real chemistry of life that involve carbohydrates, aminoacids, nuclei acids and proteins. They will understand the mechanism going on in biological life (DNA, RNA, NADH).		

Course Details

Unit	Contents	Hours/ Semester
1	Chemistry of Carbohydrates and Lipids: Sugar monomers & their configurations, Structure of polysaccharides: starch and glycogen, Structure and biological functions of glucoaminoglycans, Carbohydrate metabolism: Photosynthesis, Kreb's cycle, Glycogenolysis. Characterization and degradation of Fatty acids, Oils.	10
2	Chemistry of Amino acids and Proteins: Amino acids, Peptides and Proteins, Chemical and enzymatic hydrolysis of proteins to peptides, Amino acid sequencing, Primary structure proteins, Secondary structure proteins: α -helix, β sheet, super secondary structure, triplex helix structure of collagen. Tertiary structure of proteins, folding and domain structure. Quaternary structure, Amino acid metabolism: degradation and bio synthesis of Proline, valine and isoleucine.	10
3	Chemistry of Nucleic acids: Purine and pyrimidines bases of nucleic acids, Pairing via hydrogen bonding, Structure of ribo nucleic acid (R.N.A) and de-oxyribo nucleic acid (D.N.A), Double helix model of DNA, Chemical and enzymatic hydrolysis of nucleic acid, The chemical basis of heredity, An overview of replication of DNA, Transcription, Translation and Genetic code.	10
4	Mechanisms in Biological Chemistry: Nature's oxidizing agent (NAD^+), Nature's reducing agent (NADH), ATP, ADP, Phosphoenolpyruvate, Mechanism of glycolysis and citric acid cycle, amino acid ammonia lyases, Synthesis of Haemoglobin and its function, DNA synthesis.	10
Total		40

Reference & Textbooks :

1. Principle of Biochemistry (Lehninger): D. L. Nelson and M. M. Cox, W. H. Freeman and company, New York.
2. Fundamentals of Biochemistry: D. Voet, J. G. Voet and C. W. Pratt; John Wiley and sons.
3. Bioinorganic Chemistry: Bertini, Gray, Lippard, Valentine, Viva Books Private Limited.
4. Outlines of Biochemistry: Eric Conn, Paul Stumpf, George Bruening & Roy H. Doi, John Wiley & Sons
5. Organic Chemistry: Clayden, Greeves and Warren, Oxford Univ. Press, 2nd Ed (2012).
6. Advanced Organic Chemistry: F. A. Carey and R. J. Sundberg, Part A and B Springer, 5th Ed.(2005)
7. A Guide Book of Mechanism in Organic Chemistry: Peter Sykes, Longman.6th Ed.(1999)
8. Structure and Mechanism in Organic Chemistry: C. K. Ingold, Cornell University Press, 3rd (1957).
9. Organic Chemistry: R. T. Morrison and R. N. Boyd, Prentice-Hall, 6th Ed.(1992)

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments

Course No. CHEM E403	Course Name: Bio-inorganic & Supramolecular chemistry	
Semester: IV	Credits: 4	Elective Course
Pre-requisites: C102, C202		
Course Outcome: The student will learn about Bioinorganic Chemistry of Alkali and Alkaline Earth Metals, Metalloproteins, Metalloenzymes; Supra molecular Chemistry		

Course Details

Chapter/ Unit	Contents	Hours/ Semester
1	Bioinorganic Chemistry of Alkali and Alkaline Earth Metals: Essential and trace elements in biological systems, structure and functions of biological membranes; mechanism of ion transport across membranes; sodium pump; ionophores: valinomycin and crown ether complexes of Na ⁺ and K ⁺ ; photosynthesis: chlorophyll a, PS I and PS II; role of calcium in muscle contraction, blood clotting mechanism.	12
2	Metalloproteins: Heme proteins and oxygen uptake, Structure and functions of haemoglobin, myoglobin, hemocyanin and hemerythrin, Iron-sulphur proteins: rubredoxin and ferredoxins, Nitrogenase, Bio-inorganic aspects of nitrogen fixation.	12
3	Metalloenzymes: Zinc enzymes – carboxypeptidase and carbonic anhydrase, Iron Enzymes – catalase, peroxidase and cytochrome p-450, Copper enzymes – superoxide dismutase, Mg enzymes – vitamin B ₁₂ .	12
4	Supra molecular Chemistry: A) Molecular recognition: Spherical recognition, Recognition of anionic Substrate, Tetrahedral recognition, Co receptor molecules and multiple recognition, Binding and recognition of neutral molecules. B) Supra molecular reactivity and catalysis. C) Molecular assembly in supra molecular chemistry. D) Supra molecular devices: Suitable binding, photochemical and electrochemical sensor wires.	12
Total		48

Reference & Textbooks :

1. Lehninger Principle of Biochemistry D. L. Nelson and M. M. Cox, W. H. Freeman, 6th Ed. (2012).
2. Fundamentals of Biochemistry, Life at the Molecular Level: D. Voet, J. G. Voet and C. W. Pratt, Wiley, 5th Ed. (2016).
3. Bioinorganic Chemistry, I. Bertini, H. B. Gray, S. J. Lippard, J. S. Valentine, University Science Books, US (1994).
4. Supramolecular Chemistry: Concepts and Perspectives, J. M. Lehn, Wiley VCH (1995).

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments

Course No. CHEM E404	Course Name: Asymmetric Synthesis	
Semester: IV	Credits: 4	Elective Course
Pre-requisites: C101, C201, E302		
Course Outcome: This is an advanced level course where students would learn asymmetric construction of C-C and C-hetero bond-forming reactions. Various aspects of asymmetric synthesis such as basic principle of enantioselective reactions, dynamic kinetic asymmetric transformations (DYKAT), synthesis of enantioenriched organic compounds via resolutions (kinetic, parallel kinetic, and dynamic kinetic resolutions), and various diastereoselective processes would be taught in this course. A study of asymmetric synthesis is illustrated to achieve enantiopure compounds.		

Course Details

Unit	Contents	Hours/ Semester
1	Basic principles of Asymmetric synthesis—Definition, Stereospecific, Stereoselective – enantioselective and diastereoselective. Importance of asymmetric synthesis, conditions for an efficient asymmetric synthesis, energetic considerations, Concepts and principles of enantioselective and diastereoselective transformations (including Curtin-Hammett principle, 1,2-induction and 1,3-induction models. Reactions using Chiral Lewis Acids and Brønsted Acids	10
2	Asymmetric C-C bond forming reactions (Asymmetric alkylations, Asymmetric additions to C=O, C=N, C=C bonds) Asymmetric oxidation reactions (alcohol oxidation, Dihydroxylations, epoxidations, chiral sulfoxides, aminohydroxylations etc.)	10
3	Hydrogenation and Asymmetric reductions of C=C, C=O and C=N bonds. Resolutions (Kinetic, Parallel Kinetic, Dynamic Kinetic resolutions) Non-linear effects and autocatalysis.	10
4	Desymmetrization reactions, Introduction to Organocatalysis (Covalent and non-covalent catalysis), Proline based organocatalytic reactions: Aldol, nitroaldol, Mannich, Michael addition reactions and other conjugate additions, Henry reaction etc. Enzyme catalyzed reactions: aldol, nitroaldol, epoxidation, sulfoxidation, Baeyer-Villiger oxidation, Ketone reduction.	10
Total		40

Reference & References:

- Walsh, P. J., Kozlowski, M. C. Fundamentals of Asymmetric Catalysis, University Science Book, **2009**.
- Ojima, I. Catalysis in Asymmetric Synthesis, Wiley-VCH, **2004**.
- Carreira, E., Kvaerno, L. Classics in Stereoselective Synthesis, Wiley-VCH, **2009**.
- Berkessel, A., Groger, H. Asymmetric Organocatalysis: From Biomimetic Concepts to Applications in Asymmetric Synthesis, Wiley-VCH, **2005**.
- Hassner, A. Advances in Asymmetric Synthesis, Vol 3, Elsevier, **1999**.
- Smith, M. B. Organic Synthesis, 2nd edition, McGraw Hill, New Delhi, 2004.
- Ojima, I. Catalytic Asymmetric Synthesis, 3rd ed., Wiley, New Jersey, 2010.

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class

Course No. CHEM E405	Course Name: Polymer Chemistry	
Semester: IV	Credits: 4	Elective Course
Pre-requisites: Basic Organic & Physical chemistry		
Course Outcome: The student will learn about Structure and Properties, Basics of Polymer; Polymer Characterization; Structure and Properties		

Course Details

Chapter/ Unit	Contents	Hours/ Semester
1	Basics of Polymer: Importance of polymers, Basic concepts: Monomer, repeat units, degree of polymerization, Linear, branched and network polymers, Classification of polymers, Polymerization: Condensation, addition, radical and coordination polymerization, Polymerization conditions and polymer reactions, Polymerization in homogenous and heterogeneous systems.	12
2	Polymer Characterization: Polydispersion-average molecular concept, Number, weight and viscosity average molecular weights, Polydispersity and molecular weight distribution, Practical significance of molecular weight, Measurement of molecular weights, End group, viscosity, Light scattering, osmotic and ultracentrifugation methods, Analysis and testing of polymers, chemical analysis of polymers, Spectroscopic methods, X-ray diffraction study, Microscopy, Thermal analysis and physical testing-tensile strength, Fatigue impact, Tear resistance, Hardness and abrasion resistance.	12
3	Structure and Properties: Morphology and order in crystalline polymers-centrifugation of polymer chains, Crystal structure of polymers, Morphology of crystalline polymers, strain induced morphology, crystallization and melting, Polymer structure and physical properties-crystalline melting point, melting points of homogenous series, effect of chain flexibility and other steric factors, entropy and heat of fusion, Glass transition temperature, T _g , Relationship between T _m and T _g , effects of molecular weight, diluents, chemical structure, chain topology, branching and cross linking, Property requirements and polymer utilization	12
4	Properties of Commercial Polymers: Polyethylene, poly vinyl chloride, polyamides, phenolic resins, epoxy resins and silicone polymers, Functional polymers- Fire retarding polymers and electrically conducting polymers, Biomedical polymers –contact lens, dental polymers, artificial heart, kidney, skin and blood cells.	12
Total		48

Reference & Textbooks:

1. Textbook of Polymer Science: F. W. Billmeyer Jr, Wiley
2. Polymer Science: V. R. Gowariker, N. V. Biswanathan and J. Sreedhar, Wiley, Eastern.
3. Physics and Chemistry of Polymers: J. M. G. Cowie, Blackie Academic and Professional.

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments

Course No. CHEM E406	Course Name: Industrial Chemistry	
Semester: IV	Credits: 4	Elective Course
Pre-requisites: Basics in Chemistry		
Course Outcome: The student will gain knowledge on various industrial products, their preparation and learn how to make chemical products for industry with perspective to Petroleum, coal based chemicals, Oil based industries, Stoichiometry and unit operation, Pesticides, Fertilizer, Medicine and Pharmacological industries, High energy materials and industrial hygiene with safety. The will help in inculcating entrepreneurship among students		

Course Details

Unit	Contents	Hours/ Semester
1	Petroleum, coal and polymer: Composition of petroleum, cracking processes, commercial production of Ethylene, Acetylene, Polymerisation mechanism, addition, condensation, step growth, chain growth, method of polymerisation, Zeigler-Natta polymerization, distillation of coal.	10
2	Oil, Detergents, Fermented product and Unit operation: - Oil based industries: Oils and fats, solvent extraction of oils, hydrogenation of oils, use of oil in the manufacturing of soap, paints and varnishes. - Surface active agents: Classification and manufacturing of detergents used for cleaning purpose. - Fermentation industries: A general discussion of Fermentation conditions, manufacturing of Penicillin. - Unit operation: Distillation, Absorption and Stripping, Extraction and leaching, crystallization, Psychometric, Drying, Evaporation, less conventional operation	10
3	Pesticides, Fertilizer and Medicines: Pesticides: Classification- insecticides, fungicides and rodenticides, Detrimental effects of pesticides (DDT, BHC, Parathion), Manufacture/synthesis of DDT, BHC, Parathion. Fertilizers: classification, synthesis of fertilizers- nitrogenous, phosphorous and potassium fertilizer. Medicines: Different types of drugs, analgesics, antipyretics, antiseptics and antibiotics, broad spectrum antibiotics. Metals in medicines: Metaldeficiency and disease, toxic effect of metals.	10
4	High Energy Materials, Industrial Chemical Safety: <i>Explosives:</i> Definition, classification, synthesis and uses: nitrobenzene, TNT, PETN, picric acid, ethylene glycol dinitrate, nitroglycerine, nitrocellulose, RDX. <i>Fire retardants:</i> Definition, classification, and uses. Personal protective equipments, <i>Industrial hazards and Safety:</i> Process hazards checklists, hazard surveys, safety program, Various common industrial hazardous warning/safety symbols.	10
Total		40

Reference & Textbooks :

1. Industrial Chemistry by B. K. Sharma
2. Analytical Chemistry by G. D. Christain
3. Introduction to chromatography: Bobbit
4. Instrumental Methods of analysis (CBS)- H.H . Willard, L.L. Mirrit, J.A. Dean
5. Instrumental Methods of Analysis : Chatwal and Anand
6. Instrumental Methods of Inorganic Analysis(ELBS) : A.I. Vogel
7. Chemical Instrumentation: A Systematic approach- H.A. Strobel

8. The principals of ion-selective electrodes and membrane transport: W.E.Morf
 9. Physical Chemistry – P.W. Atkins
 9. Principal of Instrumental Analysis- D. Skoog and D. West
Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class, Assignments.

Course No. CHEM E407	Course Name: Organic synthesis in Medicines	
Semester: IV	Credits: 4	Elective Course
Pre-requisites: C101, C201, E301, E302, E402		
Course Outcome: This course is designed to impart the fundamental knowledge on the applications of organic synthesis for the human society. The chapter deals with different medicines that were synthesized through organic synthesis. The student learns how to synthesize Analgesics, Anthelmintics, Muscle relaxant, Anesthesia Synthesis, Tranquilizers, Respiratory, Anti-Bacterial, Anti-microbes, Anti-Biotic, Cardiotonic, Thyroid, Immuno suppressants, Antimetabolite, Nervous stimulant, Fungicide, Herbicides, Pesticides, Perfume and fragrances, Anti-virals.		

Course Details

Unit	Contents	Hours/ Semester
1	Analgesics (Paracetamol, Aspirin, Ibuprofen, Flurbiprofen, Naproxen, Diclofenac, Piroxicam, Fentanyl, Papaverine, Ketoprofen, Metamizole, Nimusulide, Tramadol, Meloxicam, Ketorolac, Levocetirizine, Flupirtine, L-DOPA). Anthelmintics (Albendazole, Loperamide, Chloroquine). Muscle relaxant (baclofen, metaxalone, Styramate, chlorzoxazone). Anesthesia Synthesis: Bupivacaine, Procaine, Cocaine, Etidocaine: Prilocaine, Morphine, Propofol, Ketamine. Sevoflurane. Tranquilizers (Diazepam, Zolpidem, Osemozotan, Propanolol); Respiratory (Salbutamol, Adrenaline, fenoterol)	10
2	Anti-Bacterial (Sulfamethoxazole, levofloxacin, Moxifloxacin, furazolidone); Dettol, 4-chloro-3,5-dimethyl phenol. Anti-microbes (Metronidazole, Cefoperazone, Daptomycin, Penicillin); Anti-Biotic (Sulfamethoxazole, Trimethoprim, Chloramphenicol); Thyroid (levothyroxine), Cardiotonic (isoproterenol, denopamine), Immuno suppressants (mycophenolic acid); Antimetabolite (azathioprine, cyclophosphamide). Nervous stimulant (Dopamine, Benzedrine)	10
3	Fungicide (Azyoxystrobin, Tricyclazole, Carbendazim, Traidimefon, Benomyl, Fenarimol) Herbicides (Paraquat Dichloride, Oxyfluorfen, Glyphosate); Pesticides (DDT, Warfarin, <u>Avicides</u> , Fenthion, <u>Avitrol</u> , <u>Parathion</u>).	10
4	Perfume and fragrances: Methyl Cinnamate (Strawberry), Phenylethyl ethyl ether (Kewra), (Z) - Z-Hex-2-enal (Aroma insect repellent), (E)-Tetradec-11-enal (spruce budworm), Vanillin, Coumarin, Muscone, Civetone, musk ketone, cashmeran, α -ionone, rose oxide, Withasomine Anti-virals: (Remdesvir, Lopinavir, Flavipiravir: Ribavirin, Galidesivir).	10
Total		40

Assessment and Expectations from Class: Tutorial, Quiz, Midsem-20, Endsem-80, attendance, Punctuality, doubt clearing class

Reference & Textbooks:

1. Robert P. Martin, Drugs and the Pharmaceutical Sciences, Vol.185. Informa Health care Publishers.
2. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons. Inc. FDA Regulatory Affairs: a guide for prescription drugs, medical devices, and biologics / edited by Douglas J. Pisano, David Mantus.
3. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and Isader Kaufer, Marcel Dekker series, Vol.143
4. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By F. A. Rozovsky and R.K. Adams
5. Synthesis of Best-Seller Drugs, 2016, Pages 783-800, Ruben Vardanyan, Victor Hruby, Elsevier

Course No. CHEM D408	Course Name: Dissertation	
Semester: IV	Credits: 6	Core Course
Pre-requisites: All semester theory & practical papers		
<p>Course Outcome: The student will work in real in some national laboratory/state or at Berhampur University of his/her choice. The student will inform ahead regarding where she/he is interested to work, provided with a consent letter from respective supervisor. Each student has to work for at least 300 hours in a reputed research laboratory or industry on a specific project under the guidance.</p> <p>a) The dissertation supervisor should be a Professor/Associate Professor/Assistant Professor/Scientist/Scientific Officer or Equivalent (having at least PhD degree).</p> <p>b) The research work will be submitted in the form of a dissertation within one week of last theory examination/as instructed by HOD. The student has to present his work in power point before an External examiner and an Internal examiner for evaluation.</p>		

Course Details

Chapter	Contents
1	Literature review
2	Learning objectives
3	Dissertation work along with instrumental techniques
4	Report writing in proper format

Course No. VAC3	Course Name: Cultural Heritage of South Odisha	
Semester: IV		Value Added Course
Pre-requisites: If any		
Course Outcome: The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale.		

Course Details

Chapter/ Unit	Contents	Hours/ Semester
1	Literary works of Kabi Samrat Upendra Bhanja	08
2	Other Litterateurs of South Odisha	08
3	Cultural Heritage of South Odisha	08
4	Folk and Tribal Traditions of South Odisha	08
Total		32

Syllabus for
Two Years M.Sc. Program
in
COMPUTER SCIENCE



BERHAMPUR UNIVERSITY
Berhampur – 760 007, ODISHA
2023

M.Sc. in Computer Science

SEM	COURSE CODE	COURSE NAME	CREDIT	MARKS		TOTAL
				Mid Sem	End Sem	
I	MSCCS C 1.1	DATA STRUCTURES USING C	4	20	80	100
	MSCCS C 1.2	COMPUTER SYSTEM ARCHITECTURE	4	20	80	100
	MSCCS C 1.3	DISCRETE MATHEMATICAL STRUCTURES	4	20	80	100
	MSCCS C 1.4	DATABASE MANAGEMENT SYSTEM	4	20	80	100
	MSCCS P 1.5	LAB –1: DATA STRUCTURE & DBMS LAB	2	10+10	40+40	100
II	MSCCS C 2.1	OBJECT ORIENTED PROGRAMMING USING JAVA	4	20	80	100
	MSCCS C 2.2	OPERATING SYSTEMS	4	20	80	100
	MSCCS C 2.3	DESIGN AND ANALYSIS OF ALGORITHMS	4	20	80	100
	MSCCS C 2.4	DATA COMMUNICATION & COMPUTER NETWORKS	4	20	80	100
	MSCCS P 2.5	LAB –2: JAVA PROGRAMMING LAB	4	20	80	100
	MSC VAC300	Data Analysis with Power BI	Non-Credit Course			
III	MSCCS C 3.1	PYTHON PROGRAMMING	4	20	80	100
	MSCCS C 3.2	ARTIFICIAL INTELLIGENCE	4	20	80	100
	MSCCS C 3.3	SOFTWARE ENGINEERING	4	20	80	100
	MSCCS CBCS	COMPUTER FUNDAMENTALS & C PROGRAMMING	4	20	80	100
	MSCCS P 3.5	LAB-3: PYTHON PROGRAMMING LAB	4	20	80	100
	MSC VAC301	Programming with NumPy and Pandas	Non-Credit Course			
IV	ELECTIVE COURSES (A student has to choose one course from each group)					
	ELECTIVE - I					
	MSCCS E 4.1	DATA WAREHOUSING AND DATA MINING	4	20	80	100
	MSCCS E 4.2	INTERNET OF THINGS	4	20	80	100
	MSCCS E 4.3	CLOUD COMPUTING	4	20	80	100
	ELECTIVE - II					
	MSCCS E 4.4	DIGITAL SIGNAL PROCESSING	4	20	80	100
	MSCCS E 4.5	COMPILER DESIGN	4	20	80	100
	MSCCS E 4.6	BIG DATA ANALYTICS	4	20	80	100
	MSCCS PR 4.1	PROJECT WORK / DISSERTATION AND VIVA VOCE	12			300
TOTAL					2000	

Note: C – Core Course, E – Elective Course, P – Practical, PR - Project

*** CBCS Course to be offered in the 3rd Semester by Computer Science Dept. for others.**

SEMESTER - I

COURSE CODE: MSCCS C 1.1	DATA STRUCTURES USING C
CORE COURSE	4 CREDITS

UNIT-1

Structure of C Program, Identifiers, Primitive Data types, variables, constants, Keywords, input/output statements. Operators and Expressions: Expression evaluation: Operator Precedence and Associativity. Conditional Branching: Simple if, if..else, nested if...else and switch..case, Iteration and loops: For, While, Do ..While statements, nested loops, break and continue statements. Arrays & Strings: One-dimensional, Two dimensional and multi-dimensional arrays

UNIT-2

Using pointers, Function: Declaration, Definition, Call by value, Call by reference, Scope of variables, Storage classes, Recursive functions. Use of Pointers in Inter-function communication via arrays, Strings handling, Dynamic memory allocation. Structures, Defining structures and Array of Structures, Structure vs Union, self-referential structures.

UNIT-3

Abstract Data Types – Definition and Representation, ADT of Stack, Stack and its uses: reversing string, matching parentheses, in fix to postfix. Queue: linear & circular queue. Linked list and its representation, Single, circular and double linked lists. Operations on linked list – Insertion, Deletion, Traversals.

UNIT-4

Tree: Definition and Terminologies, child and parent nodes, Sub tree, root, leaf node, internal node, height of a Binary tree. Binary tree traversals. Graph representation, Graph traversal, AVL tree, B-tree.

Sorting and Searching: Bubble sort, selection sort quick sort and merge sort. Linear and binary search, Fibonacci search.

BOOKS:

1. Behrouz A. Forouzan & Richard F. Gilberg, "A Structured Programming Approach Using C", 3rd Edition, Cengage Publication, ISBN: 9788131503638, 2007.
2. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, 2nd Edition, Prentice Hall of India, 2015.
3. Byron Gottfried, Schaum's Outline of Programming with C, 3rd Edition, McGraw-Hill, 1st July 2017.

COURSE CODE: MSCCS C 1.2	COMPUTER SYSTEM ARCHITECTURE
CORE COURSE	4 CREDITS

UNIT-1

Computer Function and Interconnections: Computer Components, Computer function, Interconnection Structures, Bus interconnection PCL. Cache memory; Computer Memory System, Cache Memory Principles, Elements of cache Design.

UNIT-2

External Memory: Magnetic Disk, RAID, Optical Memory, Magnetic Tape, External Devices, I/O module, Programmed I/O, Interrupt-Driven I/O, Direct memory access, I/O channels and processors, Fire Wire and infiniband.

UNIT-3

CPU structures and function: Processor Organization, register organization, instruction cycle, instruction pipelining, The Pentium Processor.

Reduced Instruction Set computer (RISC): Instruction Execution Characteristics, Use of a large register file, Compiler Based Register optimization, Reduced Instruction Set architecture.

UNIT-4

Instruction-Level Parallelism and super scalar Processors: Overview, design issues, Pentium-4, IA-64 Architecture: Motivation, General Organization, prediction, Speculation, and software pipelining, Multiple Processor Organization, Symmetric Multiprocessors, Vector computation.

BOOKS:

1. Computer Organization and Architecture, Stallings, W. Fourth Edition, PHI-Publication.
2. Computer System Architecture Third Edition, Mano. M. M. PHI-Publication.
3. Computer Architecture and Organization Hayes, J.P. Third Edition, McGraw Hill International-Publication.
4. Parallel programming in c with MPI and Open, Quinn. M. J. TMH-Publication.

COURSE CODE: MSCCS C 1.3	Discrete Mathematical Structures
CORE COURSE	4 CREDITS

UNIT-1

Fundamentals of logic, Propositional equivalences, Predicates and Quantifiers, quantifiers, Methods of Proof, Sequences and summations, Mathematical induction.

UNIT-2

Sets, Set operation, Properties of binary relation, Equivalence relations and partitions, ordering relation and lattices, Chains and antichains, function and pigeonhole principle.

UNIT-3

The basics of counting, Permutation and combination, Recurrence relations, Solving recur relations, generating functions, inclusion exclusion.

UNIT-4

Introduction to graphs, graph terminology, representing graphs, and isomorphism, Euler and Hamilton paths, Introduction to trees, Application of trees, Groups, Subgroups, Cosets and Langrange's theorem.

BOOKS:

1. Elements of discrete mathematics, C.L. Liu, Second Edition, McGraw Hills International publication.
2. Discrete mathematics and its Applications, Kenneth H. Rosen, Fifth edition, Mc Graw International Publication.
3. Discrete Mathematical structure Bernardi Kolman, Robert C.Busby, Sharon Ros, Prentice Hall of India-Publication
4. Discrete Mathematics for Computer Science and Mathematics, Mott, J.L. Kandel, A.& Baker, T.P Second Edition (P 1999) Discrete Mathematics, N.Ch.S.N. Iyenger, Chnkrasekaran, Venkatesh, Arunachalam. Publication.

COURSE CODE: MSCCS C 1.4	DATABASE MANAGEMENT SYSTEMS
CORE COURSE	4 CREDITS

UNIT-1

Database system: Data Models, Database Languages, transaction management, database system structure, Application architecture.

Entity relationship model: Basic concepts & constraints, Keys, Design Issues, Entity relationship Diagram, weak entity sets, Extended E-R features, design of E-R database scheme, Reduction of an E-R schema to tables, overview of relational model and relational data base design, Normalization, Normal forms.

UNIT-2

SQL: Basic structure, Set Operation, aggregate functions, null values, Nested sub queries, Views, Complex Queries modification of the database, joined relations, Data definition language, Embedded SQL, Domain Constraints, Referential Integrity.

UNIT-3

Query Processing: Measures of query cost, Selection, Operation, Sorting, Join and other Operation, Evaluation of expressions.

Query Optimization: Estimating Statistics of Expression Results, Transformation of Relational Expression, Choice of Evaluation plans, materialized views.

UNIT-4

Transaction: Transaction, Transaction State, Implementation of Atomicity and Durability, Concurrent execution, Serializability, Recoverability, Testing for Serializability.

Concurrency Control: Lock-Based, Timestamp-Based, Validation-based Protocols

Multiple granularity, Multiversion schemes, deadlock handling, concurrency in index structures.

BOOKS:

Database System Concepts, Silberschatz, A, Korth, H.F. and Sudarshan. S, McGraw-Hill

SEMESTER – II

COURSE CODE: MSCCS C 2.1	OBJECT ORIENTED PROGRAMMING USING JAVA
CORE COURSE	4 CREDITS

UNIT-1

Introduction to Java and java programming Environment: Simple java program structure, Java tokens, Java statements, Implementing java program, java virtual machine, command line arguments, programming style, Constants, variables, & data types, constants, variables, data types, declaration of variables, scope of variables, symbolic constants, type casting.

Operators and expressions: arithmetic, logic, relational assignment, increment and decrement, conditional and special operator, arithmetic expression, evaluation of expression, precedence of arithmetic operators, type conversion in expression, operator precedence and associativity, mathematical functions, decision making and branching, decision making and looping.

UNIT-2

Classes, object and methods defining a class, adding variables, adding methods, creating objects, accessing class members, method over loading, static members, nesting methods, inheritance: Extending a class, overriding methods, final variables and methods, final classes, analyze methods, abstract methods and classes, visibility control.

UNIT-3

Array, strings and vectors: Creating an array, one dimensional and two dimensional arrays, vectors, wrapper classes,

Interfaces: defining extending, implementing and accessing interfaces.

Packages: Java API packages, using system packages, naming conventions, creating, accessing using packages, adding a class to a packages, hiding classes.

UNIT-4

Errors and Exception: Types of errors, Exceptions, syntax of exception handling code, multiple catch statements, using final statements, throwing our own exceptions, using exceptions for debugging.

Managing I/O files: stream, stream classes, byte stream classes character stream classes I/O classes, file classes, I/O exceptions, creation of files, reading and writing characters, random accesses files, interactive I/O.

BOOKS:

1. Programming with JAVA, E. Balagurusamy, 2nd/ed (TMH)
2. The complete reference JAVA 2, H. Schildt, 5th/ed (TMH)

COURSE CODE: MSCCS C 2.2	OPERATING SYSTEMS
CORE COURSE	4 CREDITS

UNIT-1

Process Synchronization: Concept of processes, Concurrent processes, Threads, Classical synchronization problems, Monitors and its application.

Process Deadlocks: Introduction causes of deadlocks, Deadlock handling strategies, Models of deadlock.

UNIT-2

Memory Management: Background, Logical versus physical address space, swapping, contiguous allocation, Paging, Segmentation, Virtual Memory: Demand paging, Page replacement algorithms.

UNIT-3

Distributed OS and Multi Processor system: Models, Naming, Process migration, Remote Procedure Calls, Multiprocessor Interconnections, Types, Multiprocessor OS functions and requirements, Multiprocessor synchronization.

UNIT-4

Security: Security threats and goals, Penetration attempts, Security Policies and mechanisms, Authentication, Protection and access control formal models of protection.

BOOKS:

1. Advanced concepts in Operating Systems, Mukesh Singhal and Niranjana G. Shivaratri, TMH.
2. Operating System Concepts and Design, Milan Milenkovic, TMH
3. Operating System, H.M. Beitel, Pearson. Operating System concept, Abraham Silberchatz and Peter Bear Galvin, Addison. Wesley.

COURSE CODE: MSCCS C 2.3	DESIGN AND ANALYSIS OF ALGORITHMS
CORE COURSE	4 CREDITS

UNIT-1

Introduction to problems and algorithms, Mathematics for algorithm analysis , Insertion sort
Analysing algorithms, Designing of algorithms, Asymptotic notation Standard notations and
common functions, Recurrence relations, The substitution method, The recursion-tree
method, The master method, Divide and conquer: Min-Max Heap, Priority queue, Heapsort ,
Quicksort, Merge Sort, Fast Fourier transform ,Finding the convex hull: Graham Scan,
Finding the closest pair of points.

UNIT-2

Greedy method: Elements of the greedy strategy, Huffman codes, task-scheduling problem,
Fractional Knapsack problem, Coin change problem, Dynamic programming: Assembly-line
Scheduling, Matrix-Chain Multiplication, Longest Common Sub-sequence (LCS), 0/1
Knapsack problem.

UNIT-3

Graph algorithms: Basic Definitions and Application, Representations of graphs, Breadth-
first search and Depth-first search, Data Structures for Disjoint Sets, strongly connected
components, Minimum Spanning Trees: The algorithms of Kruskal and Prim.

UNIT-4

NP-Completeness: Classes P and NP, NP-complete problems.: Reduction of 3SAT to
Subset Sum, Approximation Algorithm for TSP.

BOOKS:

1. Thomas H Cormen, Charles E Lieserson, Ronald L Rivest and Clifford Stein,
Introduction to Algorithms, Third Edition, MIT Press/McGraw-Hill, 2009.
2. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, Computer Algorithms/
C++, Second Edition, Universities Press, 2007.
3. Sanjoy Dasgupta, Christos H. Papadimitriou and Umesh V. Vazirani, Algorithms,
McGraw-Hill, 2008.

COURSE CODE: MSCCS C 2.4	DATA COMMUNICATION & COMPUTER NETWORKS
CORE COURSE	4 CREDITS

UNIT-1

Introduction to Data Communications and Network Models: Protocols and Standards, Layers in OSI Models, Analog and Digital Signals, Transmission Modes, Transmission Impairment, Data Rate Limits, Performance, Digital Transmission, Network Devices & Drivers: Router, Modem, Repeater, Hub, Switch, Bridge (fundamental concepts only).

Transmission Media: Guided Media, Unguided Media, Switching Techniques: Packet Switching, Circuit Switching, Datagram Networks, Virtual-Circuit Networks, and Structure of a Switch.

UNIT-2

Error Detection and Correction: Checksum, CRC, Data Link Control: Framing, Flow and Error Control, Noiseless Channels, Noisy channels, (Stop and Wait ARQ, Sliding Window Protocol, Go Back N, Selective Repeat) HDLC, Point-to-Point Protocol. Access Control: TDM, CSMA/CD, and Channelization (FDMA, TDMA, and CDMA).

UNIT-3

Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Virtual-Circuit Transport Layer Protocol, Sockets, Process-Process Delivery, UDP, TCP.

Application layers: DNS, SMTP, POP, FTP, HTTP, Basics of WiFi (Fundamental concepts only).

UNIT-4

Domain Name System (DNS): Name Space, Domain Name Space, DNS in Internet, Resolution and Dynamic Domain Name System (DDNS), Remote logging, Electronic Mail (SMTP) and file transfer (FTP), WWW: Architecture & Web document, HTTP: Transaction & Persistent vs. Non-persistent connection. Introduction to Wi-Fi and Li-Fi Technology.

BOOKS:

1. Data Communications and Networking, 4th Edition by Behrouza A. Forouzan, TMH.
2. Computer Networks, A.S. Tanenbaum, 4th edition, Pearson Education.

SEMESTER - III

COURSE CODE: MSCCS C 3.1	PYTHON PROGRAMMING
CORE COURSE	4 CREDITS

UNIT-1

Features and History of Python, Literal constants, variables and identifiers, data types, Input operations, comments, reserve words, indentation, operators and expressions, operations on strings, other datatypes, conditional branching statements, loop structures, break, continue, pass, else. Functions in Python.

UNIT-2

Concatenating, appending, and multiplying string formatting operators, built-in string methods and functions, slice operation, ord() and chr(), in and not in operations, comparing strings, iterating strings, string module, match(), search() and sub (), find all ()and finditer(). Data structures: sequence, lists, functional programming, tuple, sets, dictionaries.

UNIT-3

Class and Objects: class methods and self-arguments, the `_init_()`, class variable and object variable, `_del_()`, public and private data members, calling a class method from another class method, built-in functions to set, get and delete class attributes Inheritance, types, composition or containership, abstract classes or interfaces Operator overloading: implementing Operator overloading, reverse adding, overriding `_getitem_()` and `_setitem_()` methods, overriding the in operator, overloading the misc functions.

UNIT-4

Error and Exception handling: handling exceptions, multiple exception blocks, multiple exceptions in a single block, except block without exception, else clause, raising an exception, instantiating exceptions, handling exceptions in invoked functions, built-in and user-defined exceptions, the final block, and predefined cleanup action.

BOOKS:

1. Python programming, Reema Thareja, Oxford publications.
2. Learning python, Marklutz, Oreilly

COURSE CODE: MSCCS C 3.2	ARTIFICIAL INTELLIGENCE
CORE COURSE	4 CREDITS

UNIT-1

Introduction to AI, Structure of Intelligent agent, Characteristics of AI problems, Problem solving by searching: BFS, DFS, Iterative Deepening, Bi-directional search, constraint satisfactory search, informed search, Hill climbing search, best first search, Heuristic function, A*, Problem decomposition, AO*

UNIT-2

Knowledge & reasoning: Agents that reason logically first order logic, syntax and semantics. Inference in first order logic: Inference rules, modus ponens, Unification, Forward and backward reasoning, Resolution planning, simple planning agent, from problem solving to planning, Situation calculus, planning and acting, conditional planning.

UNIT-3

Learning: Learning from observations, A general model of learning Agents, Expert systems, Architecture, Knowledge acquisition, MYCIN, Natural Language processing: Syntactic processing, Semantic analysis. Practical applications: Machine translation, Effective parsing.

UNIT-4

Introduction to pattern Recognition: Recognition & Classification process, Learning Classification patterns, Visual image understanding, Image Transformation. Perception: Image formation, Image processing operations, speech recognition, Introduction to Robotics.

BOOKS:

1. Artificial Intelligence a Modern Approach, Stuart Russel & Peter Norving, Person Education Asia.
2. Artificial Intelligence, E.Rich and Knight, TMH.

COURSE CODE: MSCCS C 3.3	SOFTWARE ENGINEERING
CORE COURSE	4 CREDITS

UNIT-1

Introduction, Introduction to Software Development processes, Agile software development: Agile methods, Plan-driven and agile development, Extreme programming, Agile Process model: Adoptive software development, scrum, crystal, Agile modelling, Agile unified process.

UNIT-2

Requirements engineering: Functional and non-functional requirements: The software requirements document, Requirements specification, Requirements engineering processes, Requirements elicitation and analysis, Requirements validation, Requirements management

UNIT-3

Object-oriented design using UML: Analysis and Design: Concepts, Classes and Objects. Relationships Among Objects. Inheritance and Polymorphism, Design Concepts, Design Notation and Specification, Design Methodology, Dynamic Modelling, Functional Modelling, Defining Internal Classes and Operations, Design patterns. System modelling: Context models, Interaction models, Structural models, Behavioral models Model-driven engineering

UNIT-4

Architectural design: Architectural design decisions, Architectural views, Architectural patterns, Application architectures, Design and implementation, Testing: Introduction to software testing, verification and validation, unit testing, integration testing, system testing. Software Maintenance.

BOOKS:

1. Rajib Mall, Fundamentals of Software Engineering, Fifth Edition, PHI, 2018.
2. Software Engineering, A Practitioner's Approach, Roger S. Pressman, TMG Hill.
3. Software Engineering, I. Sommerville, 9th Ed., Pearson Education.

In 3rd Sem, a student has to opt for a CBCS course offered by any other department	
CBCS Course	4 CREDITS

SEMESTER – IV

ELECTIVE - I

COURSE CODE: MSCCS E 4.1	DATA WAREHOUSING AND DATA MINING
CORE COURSE	4 CREDITS

UNIT-1

Concept of Data warehousing, 3-tier architecture, Multidimensional data model, schemes for multidimensional databases, OLAP, ROLAP, MOLAP and HOLAP and its operations.

UNIT-2

Data mining: Characteristics and Discrimination, association analysis, Classification and prediction, cluster analysis, concept hierarchies, interestingness measures, data mining query language, Mining association rules.

UNIT-3

Classification and Prediction: Decision tree-based classification, Bayesian classification, Classification by back propagation, k-nearest neighbor classifier, Cluster Analysis: Categorization of clustering methods, partitioning methods, k-Means and –medoids.

UNIT-4

Mining spatial databases, mining multimedia database, mining text databases, web usage mining.

BOOKS:

1. Data Mining concepts and techniques, J Hann and M, Kamber (Morgan Kaufaman)
2. Data Mining by A.K. Pujari (University press)

1.

COURSE CODE: MSCCS E 4.2	INTERNET OF THINGS
ELECTIVE COURSE	4 CREDITS

UNIT-1

Introduction & Concepts: Introduction to Internet of Things, Physical Design of IOT, Logical Design of IOT, IOT Enabling Technologies, IOT Levels. Domain Specific IOTs: Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health and lifestyle, Challenges and Issues.

UNIT-2

M2M & System Management with NETCONF-YANG: M2M, Difference between IOT and M2M, SDN and NFV for IOT, Software defined Networking, Network Function Virtualization, Need for IOT Systems Management, Simple Network Management Protocol, Limitations of SNMP, Network Operator Requirements, NETCONF, YANG, IOT Systems management with NETCONF-YANG.

UNIT-3

IoT Protocols: Protocol Standardization for IoT and WSN Protocols-SCADA and RFID Protocols-Issues with IoT Standardization Protocols IEEE802.15.4-BACNet Protocol-, Architecture- Network layer – APS Layer – Security.

UNIT-4

Case Study and IoT Application Development: IoT applications in home- infrastructures security, Industries- IoT electronic equipments. Use of Big Data and Visualization in IoT Industry 4.0 concepts.

BOOKS:

1. Vijay Madiseti, Arshdeep Bahga, "Internet of Things: A Hands-On- Approach",2014, ISBN:978 0996025515
2. Arshdeep Bahga, Vijay Madiseti, "Internet of Things (A Hands-On-Approach)", VPT, 2014.
3. Luigi Atzor et.al, "The Internet of Things: A survey, ", Journal on Networks, Elsevier Publications, October 2010.
4. Olivier Hersent, David Boswarthick, Omar Elloumi, "The Internet of Things – Key applications and Protocols", Wiley, 2012.

COURSE CODE: MSCCS E 4.3	CLOUD COMPUTING
ELECTIVE COURSE	4 CREDITS

UNIT-1

Evolution of Computing Paradigms - Overview of Existing Hosting Platforms, Grid Computing, Utility Computing, Autonomic Computing, Dynamic Datacenter Alliance, Hosting / Outsourcing, Introduction to Cloud Computing, Workload Patterns for the Cloud, "Big Data", IT as a Service, Technology Behind Cloud Computing.

UNIT-2

A Classification of Cloud Implementations- Amazon Web Services - IaaS, The Elastic Compute Cloud (EC2), The Simple Storage Service (S3), The Simple Queuing Services (SQS), VMware vCloud - IaaS, vCloud Express, Google AppEngine - PaaS, The Java Runtime Environment.

UNIT-3

The Python Runtime Environment- The Datastore, Development Workflow, Windows Azure Platform - PaaS, Windows Azure, SQL Azure, Windows Azure AppFabric, Salesforce.com - SaaS / PaaS, Force.com, Force Database - the persistency layer, Data Security, Microsoft Office Live - SaaS, LiveMesh.com, Google Apps - SaaS, A Comparison of Cloud Computing Platforms, Common Building Blocks.

UNIT-4

Cloud Security – Infrastructure security – Data security – Identity and access management Privacy.

BOOKS:

1. Kai Hwang, Geoffrey C. Fox and Jack J. Dongarra, "Distributed and Cloud Computing from Parallel Processing to the Internet of Things", Morgan Kaufmann, Elsevier, 2012
2. Barrie Sosinsky, "Cloud Computing Bible" John Wiley & Sons, 2010

ELECTIVE - II

COURSE CODE: MSCCS E 4.4	DIGITAL SIGNAL PROCESSING
ELECTIVE COURSE	4 CREDITS

UNIT-1

Discrete time signals: Elementary discrete time signals, classification of discrete time signals, manipulation of discrete time signals, classification of discrete time signals, interconnection of discrete time systems,

Response of LTI system to arbitrary systems to arbitrary input: Convolution sum, properties of convolution, Causality of LTI system, stability of LTI systems, systems with finite duration, impulse response and infinite duration impulse response.

UNIT-2

Discrete Time system described by Difference equations: Linear time- invariant systems characterized by constant- coefficient difference equations, the impulse response of a LTI systems, implementation of Discrete time systems, correlation of Discrete Time signals: Correlation and Autocorrelation sequences, properties of autocorrelation sequences.

UNIT-3

The Z-Transform: Direct z-transform, properties of z-transform. Relation z-transform, Relational z-transform: poles and zeros, pole location for causal signals, system function of a LTI systems. The inverse z-transform by contour integration by power series expansion, by partition fraction expansions, One-sided Z- transform: properties, solution of Differences Equations.

UNIT-4

The Discrete Fourier Transform: DFT, DFT as a linear transformation, Properties of DFT: periodicity Linearity, and symmetry property, Multiplication of two DFTS and circular Convolution; Addition DFT properties, Linear filtering methods based on DFT: Filtering of long data sequences (overlap save and overlap add method) Fast Fourier Transform algorithms: Rddix-2 algorithms, decimation-in-time and decimation-in frequency algorithms, Applications of FFT algorithms: Efficient computation of a DFT of two real sequences, Efficient computation of DFT of a $2N$ point real sequences.

BOOKS:

1. Digital signal processing by John G. Proakis, D.G. Manolakis, Pearson
2. Digital signal processing by S. Salivahananan, TMH
3. Introduction of Digital signal processing by J.R. Johnson, PHI.

COURSE CODE: MSCCS E 4.5	COMPILER DESIGN
ELECTIVE COURSE	4 CREDITS

UNIT-I

Introduction: Overview and Phases of compilation. Lexical Analysis: Non-Deterministic and Deterministic Finite Automata (NFA & DFA), Regular grammar, Regular expressions and Regular languages, Design of a Lexical Analyzer as a DFA, Lexical Analyzer generator. Syntax Analysis: Role of a Parser, Context-free grammars and Context-free languages, Parse trees and derivations, Ambiguous grammar. Top-Down Parsing: Recursive descent parsing, LL (1) grammars, Non-recursive Predictive Parsing, Error reporting, and Recovery. Bottom-Up Parsing: Handle pruning and shift reduces Parsing, SLR parsers and construction or SLR parsing tables, LR(1) parsers and construction of LR(1) parsing tables, LALR parsers and construction of efficient LALR parsing tables, Parsing using Ambiguous grammars, Error reporting, and Recovery, Parser generator.

UNIT-II

Syntax Directed Translation: Syntax Directed Definitions (SDD), Inherited and Synthesized Attributes, Dependency graphs, Evaluation orders for SDD, Semantic rules, Application of Syntax Directed Translation. Intermediate Code Generation: DAG for expressions, Three address codes - Quadruples and Triples, Types and declarations, Translation of Expressions, Array references, Type checking, and Conversions, Translation of Boolean expressions and control flow statements, Back Patching, Intermediate Code Generation for Procedures.

UNIT-III

Symbol Table: Structure and features of symbol tables, symbol attributes, and scopes. Code Optimization: Objective, Peephole Optimization, Concepts of Elimination of local common subexpressions, Redundant and un-reachable codes, Basics of the flow of control optimization

UNIT-IV

Run-Time Environment: Storage Organizations, Static and Dynamic Storage Allocations, STACK Allocation, Handlings of activation records for calling sequences. Code Generation: Factors involved, Registers allocation, Simple code generation using STACK Allocation, Basic blocks and flow graphs, Simple code generation using flow graphs.

BOOKS:

1. Compilers – Principles, Techniques and Tools, A. V. Aho, M. S. Lam, R. Sethi, J. D. Ullman, Pearson.
2. Compiler Design, K. Muneeswaran, Oxford University Press.

COURSE CODE: MSCCS E 4.6	BIGDATA ANALYTICS
ELECTIVE COURSE	4 CREDITS

UNIT-1

What is big data, why big data, convergence of key trends, unstructured data, industry examples of big data, web analytics, big data and marketing, fraud and big data, risk and big data, credit risk management, big data and algorithmic trading, big data and healthcare, big data in medicine, advertising and big data, big data technologies, introduction to Hadoop, open source technologies, cloud and big data, mobile business intelligence, Crowd sourcing analytics, inter and trans firewall analytics.

UNIT-2

Introduction to NoSQL, aggregate data models, aggregates, key-value and document data models, relationships, graph databases, schemaless databases, materialized views, distribution models, sharding, master-slave replication, peer- peer replication, sharding and replication, consistency, relaxing consistency, version stamps, map-reduce, partitioning and combining, composing map-reduce calculations.

UNIT-3

Data format, analyzing data with Hadoop, scaling out, Hadoop streaming, Hadoop pipes, design of Hadoop distributed file system (HDFS), HDFS concepts, Java interface, data flow, Hadoop I/O, data integrity, compression, serialization, Avro, file-based data structures.

UNIT-4

MapReduce workflows, unit tests with MRUnit, test data and local tests, anatomy of MapReduce job run, classic Map-reduce, YARN, failures in classic Map-reduce and YARN, job scheduling, shuffle and sort, task execution, MapReduce types, input formats, output formats.

BOOKS:

1. Michael Minelli, Michelle Chambers, and Ambiga Dhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses"; Wiley, 2013.
2. P. J. Sadalage and M. Fowler," NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence "; Addison-Wesley Professional, 2012.

**CBCS COURSE OFFERED BY THE
DEPARTMENT OF COMPUTER SCIENCE**

Course Code: MSCCS CBCS	Computer Fundamentals & C Programming
CBCS COURSE	4 CREDITS

UNIT-1

Key components of a computer system and its functioning, Role of operating system, Operating system services, Multiprogramming, Time sharing, File and directory system.

Problem solving with computers, Problem formulation, Design of solution steps, Writing algorithms, Coding, Compiling, Executing and testing of programs.

UNIT-2

Components of C programming language, Data types, constants and variables, Statements, Operators, Input and Output statements, Control Structures: Conditional and Looping statements, IF, IF.. ELSE, nested IF .. ELSE, SWITCH ..CASE, FOR ..., WHILE ..., DOWHILE, nested loops.

UNIT-3

Use of Arrays in C language: One dimensional and Multidimensional arrays, Declaration and Operations on Arrays, searching of item in an Array (Sequential and Binary Search), Sorting of Array items using Insertion, Selection and Bubble Sort Techniques, Matrix Operations.

UNIT-4

Use of Functions in C, Built-in Functions, String and Mathematical Library Functions.

User-defined Functions: Function Declaration, Function Definition and Function Call.

Use of Structures in C: Declaration of Structures, Structure Variables, and Array of Structures.

BOOKS:

1. Fundamentals of Computers, V Rajaraman & Neeharika Adabala, PHI Pub.
2. Programming in ANSI C, 8/e, E Balaguruswamy, TMH Publications.
3. Let us C , Yashavant Kanetkar, BPB Publications.

BERHAMPUR UNIVERSITY

Syllabus

for

M.A./M.Sc. in Mathematics

(2-Year Programme)



P. G. Department of Mathematics
Berhampur University
Berhampur-760007 (Orissa)

2023-24

BERHAMPUR UNIVERSITY
Syllabus for M.A./M.Sc. in Mathematics
(Applicable for Students Taking Admission from the Session 2023-24)

Programme Outcome:

A two years regular course M.A./M.Sc. in Mathematics will develop a breadth of understanding in Calculus, Complex analysis, Measure theory, Numerical analysis, Topology, Differential equations, Functional analysis, Optimization techniques, Number theoretic Cryptography, Graph theory and Statistics along with a depth of knowledge in algebra and analysis. The course is designed to make the students competent to solve ordinary and partial differential equations using Laplace transform and Fourier transform techniques, Eigen value problems, systems of linear differential equations, problems concerning topological spaces, continuous functions, product topologies, and quotient topologies, extension fields, roots of polynomials, complex integrals, elliptic functions. The course also includes the initial value problems by using single step methods, multi step methods, problems on interpolation, numerical differentiation and integration, measurable sets, measurable functions, problems on Green, Gauss and Stokes theorems, problems on probability distributions and generating functions, problems on Hahn-Banach theorems, problems on primitive roots, quadratic residues, and quadratic non-residues, cryptography, zero knowledge protocol and oblivious transfer, the rho method, the continued fraction method. After completion of this course the students will be capable in different competitive examinations like, TIFR, IISc, HRI, CSIR (NET & JRF), GATE, Civil services and pursue research in any national and international institutes of high repute. This course also makes the students cognizant on various features of teaching, learning, and research. Students after completion of this course are expected to operate the mathematical projects and magnify their skills in writing various research articles and to publish the same in national and international reputed journals.

First Semester

Sl. No.	Subject Code	Subject Title	Internal	External	Credits
1.	MATH C101	PARTIAL DIFFERENTIAL EQUATIONS AND ITS APPLICATIONS	20	80	4
2.	MATH C102	TOPOLOGY	20	80	4
3.	MATH C103	ALGEBRA-I	20	80	4
4.	MATH C104	ELEMENTARY COMPLEX ANALYSIS	20	80	4
5.	MATH C105	NUMERICAL ANALYSIS AND ITS APPLICATIONS	20	80	4

Second Semester					
6.	MATH C201	ABSTRACT MEASURE	20	80	4
7.	MATH C202	ADVANCED CALCULUS	20	80	4
8.	MATH C203	ALGEBRA-II	20	80	4
9.	MATH C204	ADVANCED COMPLEX ANALYSIS	20	80	4
10.	MATH C205	GRAPH THEORY	20	80	4
11.	MATH VAC206	AN INTRODUCTION TO MATLAB		Grade	Non-Credits
Third Semester					
12.	MATH C301	FUNCTIONAL ANALYSIS-I	20	80	4
13.	MATH C302	NUMBER THEORETIC CRYPTOGRAPHY - I	20	80	4
Elective - I		A Student is allowed to opt any two papers			
14.	MATH E303	OPTIMIZATION TECHNIQUES-I	20	80	4
15.	MATH E304	ORDINARY DIFFERENTIAL EQUATIONS-I	20	80	4
16.	MATH E305	MATRIX TRANSFORMATIONS IN SEQUENCE SPACES-I	20	80	4
17.	MATH E306	FLUID DYNAMICS-I	20	80	4
18.	MATH E307	ABSTRACT MEASURE AND PROBABILITY-I	20	80	4
19.	MATH E308	FUZZY SETS AND FUZZY LOGIC	20	80	4
20.	MATH E309	MATHEMATICAL STATISTICS	20	80	4
21.	MATH VAC310	AN INTRODUCTION TO LATEX		Grade	Non-Credits
CBCT Course		Other Department students will opt this paper			
22.	MATH CT300	MATHEMATICAL METHODS	20	80	4
Fourth Semester					
23.	MATH C401	FUNCTIONAL ANALYSIS-II	20	80	4
24.	MATH C402	NUMBER THEORETIC CRYPTOGRAPHY-II	20	80	4
25.	MATH D408	DISSERTATION		100	4
Elective - II		A Student is allowed to opt any two papers			
26.	MATH E403	OPTIMIZATION TECHNIQUES-II	20	80	4
27.	MATH E404	ORDINARY DIFFERENTIAL EQUATIONS-II	20	80	4
28.	MATH E405	MATRIX TRANSFORMATIONS IN SEQUENCE SPACES-II	20	80	4
29.	MATH E406	FLUID DYNAMICS-II	20	80	4
30.	MATH E407	ABSTRACT MEASURE AND PROBABILITY-II	20	80	4
31.	MATH AC409	CULTURAL HERITAGE OF SOUTH ODISHA		Grade	Non-Credits
Total			2000		80

Total Credit: 80

C- Core Course - 1400 (Mandatory with no choice)

E- Elective - 400 (Mandatory with choice departmentally)

CT- Credits Transformation - 100 (Students of Mathematics shall opt for CBCT courses offered by other Departments)

VAC – Value Added Course (Non-Credits), AC - Add on Course (Non-Credits)

Dissertation - 100

DETAILED SYLLABUS

FIRST SEMESTER

Sub. Code: MATH C101	Partial Differential Equations and its Applications	
Semester: I	Credit: 4	Core Course
Pre-requisites: Basic knowledge in ordinary and partial differential equations		
Course Outcome:		
<ul style="list-style-type: none">➤ To solve the Cauchy problems and wave equations with homogeneous and Nonhomogeneous equations.➤ To solve Eigen value Problems and Special Functions, Boundary Value Problems of partial differential equations.➤ To solve partial differential equations by applying Fourier Transforms and Laplace Transforms.		

Unit-I 10 hours

Basic Concepts and Classification of Second Order Linear Equations.

Unit-II 10 hours

The Cauchy Problem and Wave Equations, Method of Separation of Variables.

Unit-III 10 hours

Eigen value Problems and Special Functions, Boundary Value Problems.

Unit-IV 10 hours

Fourier Transforms and Laplace Transforms.

Text Book:

Tyn Myint, U. & Lokenath Debnath: Linear Partial Differential Equations for Scientists and Engineers, Birkhauser Pub. (4th Edition). Chapters: 1(1.2-1.6), 4, 5(5.1-5.7), 7, 8, 9, 12 (12.1-12.6, 12.8-12.11).

Reference Book:

Tyn Myint, U.: Partial Differential Equations of Mathematical Physics. (Elsevier Pub.)

Sub. Code: MATH C102	Topology	
Semester: I	Credit: 4	Core Course
Pre-requisites: Basic knowledge in Sets and Functions		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To learn about different Topological spaces, Open sets, Closed sets, Connected Sets and Compact sets. ➤ To understand the Metric spaces, Regular and Normal Spaces. 		

Unit-I 10 hours

Open sets and Limit points, Closed sets and Closure, Bases and relative Topologies.

Unit-II 10 hours

Connected Sets and Components, Compact and Countable compact spaces, Continuous functions, Homeomorphisms.

Unit-III 10 hours

T_0 -and T_1 -spaces & sequence, T_2 Spaces, Regular and Normal Spaces, Completely regular Spaces.

Unit-IV 10 hours

Urysohn's lemma, Urysohn's Metrization theorem, Finite products, Product invariant properties, Metric products, Product topology.

Text Book:

W. J. Pervin: Foundations of General Topology, Academic Press. Chapters: 3(3.1, 3.2 and 3.4), 4(4.1 to 4.4), 5(5.1 to 5.3, 5.5 and 5.6), 8(8.1 to 8.4), 10(10.1 only).

Reference Books:

1. J. R. Munkers: Topology-A First Course, Prentice Hall, 1996.
2. K. D. Joshi: Introduction to General Topology, Willey Eastern Ltd., 1983.

Sub. Code: MATH C103	Algebra-I	
Semester: I	Credit: 4	Core Course
Pre-requisites: Basic concepts in group theory and ring theory		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To study p- Sylow's Subgroups of a finite Group. ➤ To construct the maximal Ideals by using irreducible polynomials. ➤ To learn about finite extension field, Algebraic element and transcendental numbers. 		

Unit-I 10 hours

Automorphisms, Cayley's Theorem, Permutation Groups, Another Counting Principle.

Unit-II 10 hours

Sylow's Theorems, More Ideals and Quotient Rings, The Field of Quotients of an Integral Domain, Euclidean Rings, A Particular Euclidean Ring.

Unit-III 10 hours

Polynomial Rings, Polynomial Rings over the Rational Field, Elementary Basic Concepts of Vector Space, Linear Independence and Bases.

Unit-IV 10 hours

Extension Fields, The Transcendence of e , Roots of Polynomials, Construction with Straightedge and Compass, More about Roots.

Text Book:

I. N. Herstein: Topics in Algebra, John Wiley and Sons (2nd Edition) 2002. Chapters: 2(2.8 to 2.12), 3(3.5 to 3.10), 4(4.1, 4.2), 5(5.1 to 5.5).

Reference Books:

1. S. Singh and Q. Zameeraddin: Modern Algebra, Vikas Publishing House, 1990.
2. P. B. Bhattacharya, S. K. Jain and S. R. Nagpal: Basic Abstract Algebra, Cambridge University Press, 1995.

Sub. Code: MATH C104	Elementary Complex Analysis	
Semester: I	Credit: 4	Core Course
Pre-requisites: Basic concepts in complex numbers and complex functions		
Course Outcome:		
<ul style="list-style-type: none">➤ To find an analytic functions when its real or imaginary part is known.➤ To establish a linear transformation through cross ratio.➤ To compute the complex integrations.		

Unit-I 10 hours

Complex Numbers.

Unit-II 10 hours

Complex Functions.

Unit-III 10 hours

Conformality and Linear Transformations

Unit-IV 10 hours

Complex Integration: Fundamental theorems, Cauchy's Integral formula, Local properties of analytic functions, Complex integration continued: General form of Cauchy's theorem.

Text Book:

Lars V. Ahlfors: Complex Analysis, McGraw-Hill International Editions (3rd Edition).
Chapters: 1, 2, 3 (2.1 to 2.4, 3.1 to 3.3), 4 (4.1 to 4.4).

Sub. Code: MATH C105	Numerical Analysis and its Applications	
Semester: I	Credit: 4	Core Course
Pre-requisites: Basic knowledge in interpolation and approximation, numerical integration and differentiation.		
Course Outcome:		
<ul style="list-style-type: none">➤ To obtain the interpolating polynomial by using different methods.➤ To solve numerical integration by using various numerical methods.➤ To solve the ordinary differential equations (IVP) by single and multi step methods.		

Unit-I 10 hours

Interpolation & Approximation: Introduction, Lagrange and Newton interpolations, finite difference operators, Interpolating Polynomials using finite differences, Hermite Interpolation, Piecewise and spline interpolation.

Unit-II 10 hours

Interpolation and Approximation (contd.): Bivariate interpolations, Approximation, least square approximation, uniform approximation, Rational approximation, choice of the method.

Unit-III 10 hours

Differentiation and Integration: Introduction, Numerical differentiation, Optimum choice of step length, extrapolation method, partial differentiation, Numerical Integration, Methods based on interpolation. Methods based on undetermined coefficients, Composite Integration methods, Romberg Integration, Double integration.

Unit-IV

10 hours

Ordinary Differential Equations, Initial Value Problems: Introduction, Differential Equations, Numerical methods, single step methods, stability analysis of single step methods, Multi step methods.

Text Book:

M. K. Jain, S. R. K. Iyengar and R. K. Jain: Numerical Methods for Science and Engineering Computations (4th Edition), New Age International Publishers, 2003. Chapters: 4, 5, 6(6.1 to 6.6).

SECOND SEMESTER

Sub. Code: MATH C201	Abstract Measure	
Semester: II	Credit: 4	Core Course
Pre-requisites: Sets, Functions, Differentiation and Integration.		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To identify the measurable sets and measurable functions. ➤ To learn about Lebesgue Integrable functions. 		

Unit-I

10 hours

Introduction, Outer Measure, Measurable sets and Lebesgue Measure, A non-Measurable set, Measurable functions, Littlehood's three Principles.

Unit-II

10 hours

The Lebesgue Integral.

Unit-III

10 hours

Differentiation and Integration.

Unit-IV

10 hours

The classical Banach Spaces.

Text Book:

H. L. Royden: Real Analysis (MacMillan Pub.) Chapters: 3, 4, 5, 6.

Sub. Code: MATH C202	Advanced Calculus	
Semester: II	Credit: 4	Core Course
Pre-requisites: Limit, Continuity and Differentiability of real valued functions.		

Course Outcome:

- To understand the derivatives for functions of several variables, Differentiations of transformations and Inverse of transformations.
- To exhibit the set function, transformation of multiple Integrals.

Unit-I

10 hours

Derivatives for Functions on R^n - Differentiation of composite functions, Taylors Theorem.

Unit-II

10 hours

Transformations, Linear function and transformations, Differentials of transformations, Inverse of transformations.

Unit-III

10 hours

Implicit function theorems, functional dependence, set function, transformation of multiple Integrals.

Unit-IV

10 hours

Curves and Arc length, surfaces and surface area, Integrals over curves and surface, Differential forms, Theorem of Green, Gauss and stokes, exact form and closed form.

Text Book:

R. C. Buck: Advanced Calculus (3rd Edition), McGraw Hill. Chapters: 3(3.3 to 3.3), 7(7.2 to 7.7), 8(8.2 to 8.6), 9(9.2, 9.4, 9.5).

Sub. Code: MATH C203	Algebra-II	
Semester: II	Credit: 4	Core Course
Pre-requisites: Basic knowledge in Linear transformation and inner product spaces		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To understand the basic knowledge of Golois Group and solvability by radicals. ➤ To gain the knowledge about the triangular, Nilpotent and Jordan Form of the linear transformation. ➤ To know the Application of Hermitian, Unitary and normal Transformations. 		

Unit-I

10 hours

Dual Spaces, Inner Product Spaces, The Elements of Galois Theory, Solvability by Radicals.

Unit-II 10 hours

The Algebra of Linear Transformation, Characteristic Roots, Matrices.

Unit-III 10 hours

Canonical Forms 1 Triangular Form, Nilpotent Transformations, Jordan Form.

Unit-IV 10 hours

Trace and Transpose Determinants, Hermitian, Unitary and normal Transformations.

Text Book:

I. N. Herstein: Topics in Algebra, John Wiley and Sons (2nd Edition), 2002.
Chapters: 4(4.3, 4.4), 5(5.6, 5.7), 6(6.1 to 6.6, 6.8 to 6.10).

Reference Books:

1. S. Singh and Q. Zameeruddin: Modern Algebra, Vikas Publishing House, 1990.
2. P. B. Bhattacharya, S. K. Jain and S. R. Nagpal: Basic Abstract Algebra, Cambridge University Press, 1995.

Sub. Code: MATH C204	Advanced Complex Analysis	
Semester: II	Credit: 4	Core Course
Pre-requisites: Knowledge in Power series and special functions.		
Course Outcome:		
➤ To learn about various types of power series expansions and some special functions.		

Unit-I 10 hours

Complex Integration Calculus of Residues.

Unit-II 10 hours

Series and Product development: Power series expansion, partial fraction and factorization.

Unit-III 10 hours

Series and product development continued: Entire function, Riemann Zeta Function.

Unit-IV 10 hours

Elliptic Functions: Simple periodic functions and Double periodic functions, Elliptic

Functions, Weierstrass Theory.

Text Book:

Lars V. Ahlfors: Complex Analysis, McGraw-Hill International Editions (3rd Edition).
Chapters: 4 (4.5), 5(5.1 to 5.4), 7(7.1 to 7.3).

Sub. Code: MATH C205	Graph Theory	
Semester: II	Credit: 4	Core Course
Pre-requisites: Basic knowledge in graphs		
Course Outcome:		
<ul style="list-style-type: none">➤ To learn about various types of graphs and trees.➤ To understand the colouring of the graphs.		

Unit-I 10 hours

Introduction to Graphs.

Unit-II 10 hours

Trees and Connectivity.

Unit-III 10 hours

Euler Tours and Hamiltonian Cycles: Euler Tours, Hamiltonian graphs, Planar Graphs: Plane and Planar Graphs, Euler's Formula, Kuratowski's Theorem.

Unit-IV 10 hours

Colouring.

Text Book:

John Clark and D. A. Holton: A First Look at Graph Theory, World Scientific and Allied Publishers. Chapters: 1, 2, 3(3.1, 3.3), 5(5.1, 5.2 & 5.4), 6.

Reference Book:

N. Deo: Graph Theory and Applications to Engineering, Anil Computer Sciences, Prentice Hall of India.

Sub. Code: MATH VAC206	An Introduction to MATLAB	
Semester: II	Credit: Nil	Non-Credits Course
Pre-requisites: Basic knowledge of computer		
Course Outcome:		
<ul style="list-style-type: none">➤ To analyze and design systems.		

Unit-I 10 hours

Introduction: Matrices and arrays.

Unit-II 10 hours

Basic functions and commands.

Unit-III 10 hours

Simulink: image processing, machine learning, parallel computing and more similar concepts.

Unit-IV 10 hours

Modelling and Simulations.

Text Book:

MATLAB Programming, The MathWorks, Inc.(Pub.), Chapters: 1, 2, 3, 4, 5 and 6.

THIRD SEMESTER

Sub. Code: MATH C301	Functional Analysis-I	
Semester: III	Credit: 4	Core Course
Pre-requisites: Basic knowledge in linear space and different types of functions		
Course Outcome:		
<ul style="list-style-type: none">➤ To learn about Normed spaces and Banach spaces➤ To acquire the knowledge of Application of Uniform Boundedness Principle, Closed Graph and Open Mapping Theorem.		

Unit-I 10 hours

Normed spaces, Continuity of linear maps.

Unit-II 10 hours

Hahn-Banach Theorems, Banach spaces.

Unit-III 10 hours

Uniform Boundedness Principle, Closed Graph and Open Mapping Theorems, Bounded Inverse Theorem.

Unit-IV

10 hours

Spectrum of a Bounded operator, Duals and Transposes.

Text Book:

B. V. Limayee: Functional Analysis, New Age International Ltd. (2nd Edition). Chapters: 5, 6, 7(Except Banach Limits), 8, 9(Except Divergence of Fourier Series of continuous Functions and Matrix Transformations and Summability Methods), 10, 11, 12 (12.1 to 12.6) and 13 (13.1 to 13.5).

Sub. Code: MATH C302	Number Theoretic Cryptography-I	
Semester: III	Credit: 4	Core Course
Pre-requisites: Basic knowledge in number theory		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To able time estimates for doing arithmetic, Divisibility and Euclidean algorithm. ➤ To able the factoring large number, to find the quadratic residues in Finite fields. ➤ To solve the some cryptosystems problems with enciphering matrices. ➤ To solve the cryptosystems problems by using RSA. 		

Unit-I

10 hours

Time estimates for doing arithmetic, Divisibility and Euclidean algorithm, Congruences, Some applications to factoring.

Unit-II

10 hours

Finite fields, Quadratic residues and Reciprocity.

Unit-III

10 hours

Some simple Cryptosystems, Enciphering Matrices.

Unit-IV

10 hours

The idea of public key Cryptography, RSA.

Text Book:

Neal Koblitz: A Course In number theory and Cryptography, Springer Verlag, GTM No. 114; (1987). Chapters: 1, 2, 3, 4(4.1 and 4.2).

Reference Book:

J. Menezes, P. C. Van Oorschot and Scoff A. Vanstone: Hand Book of Applied Cryptography, CRC Press (1997).

Sub. Code: MATH E303	Optimization Techniques-I	
Semester: III	Credit: 4	Core Course
Pre-requisites: Basic knowledge in operation research		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To solve the integer programming problems by applying different type of methods. ➤ To solve the game theory problems by using linear programming, graphical methods and dominance principal. 		

Unit-I 10 hours

Integer Programming: Gomory's Algorithm for pure integer linear programs, Gomory's mixed integer- continuous variable algorithm, Branch and Bound methods.

Unit-II 10 hours

Kuhn-Tucker optimality conditions: Some theorems, Kuhn-Tucker first order necessary optimality conditions, Second order optimality condition, Lagranges method.

Unit-III 10 hours

Convex programming problem, Sufficiency of Kuhn-Tucker conditions, Legrangian saddle point and duality, duality for convex programs.

Unit-IV 10 hours

Game Theory : Game theory problem, Two person zero sum Game, Finite matrix Game, Graphical method for $2 \times n$ and $m \times 2$ matrix games, Some theorems, Dominance principal.

Text Book:

N. S. Kambo: Mathematical Programming, Affiliated EWP Ltd. New Delhi. Chapters: 6(6.4 to 6.6), 7(7.1 to 7.4), 8, 16.

Sub. Code: MATH E304	Ordinary Differential Equations-I	
Semester: III	Credit: 4	Elective Course
Pre-requisites: Derivative and Differential equations with solutions.		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To solve the linear differential equations of higher order with variable coefficients and constant coefficients. ➤ To learn the existence and uniqueness of solutions of first order ordinary differential equations with initial conditions and systems of first order ordinary differential equations with constant coefficients. 		

Unit-I 10 hours

Basic Concepts and Linear Equations of the First Order.

Unit-II 10 hours

Linear Differential Equations of Higher Order.

Unit-III 10 hours

Systems of Linear Differential Equations, Systems of First Order Equations, Existence and Uniqueness Theorems, Fundamental Matrix Non Homogeneous Linear Systems, Systems of Linear Differential Equations, Continued Linear Systems with Constant Coefficients, Linear System with Periodic Coefficients.

Unit-IV 10 hours

Equations with Deriving Arguments, Existence and Uniqueness of Solutions.

Text Book:

S. G. Deo. V. Lakhimikantbam, V. Raghavendra: Text Book of Ordinary Differential Equations (2nd Edition), Tata-Mc Graw-Hill Publishing Company Ltd. New Delhi. Chapters: 1, 2(except 2.10), 4, 5, 11.

Sub. Code: MATH E305	Matrix Transformations in Sequence Spaces-I	
Semester: III	Credit: 4	Elective Course
Pre-requisites: Knowledge in Infinite series, sequence of real numbers		
Course Outcome:		
<ul style="list-style-type: none">➤ To learn about different types of limitation methods for matrix transformations.➤ To understand various matrices such as Norlund and Riesz Musos, Scbur Matrices, Cesaro and Holder Matrices, etc.		

Unit-I 10 hours

Limitation Methods: Limitation methods, Examples of Limitation Methods, Matrix Limitation Methods, Norlund and Riesz Musos.

Unit-II 10 hours

Limitation Methods: Scbur Matrices: Consistency of Matrix Methods.

Unit-III 10 hours

Some particular Limitation Matrices: Norlund Mean, Cesaro and Holder Matrices.

Unit-IV

10 hours

Hausdorff Methods, Abels method, Tauberin Theorem, Banach Limits, Strongly Regular Matrices, Counting function.

Text Book:

G. N. Peterson: Regular Matrix Transformation, McGraw-Hill Publishing Company. Chapters: 1, 2, 3(3.1 to 3.3).

Sub. Code: MATH E306	Fluid Dynamics-I	
Semester: III	Credit: 4	Elective Course
Pre-requisites: Ordinary and Partial differential equations with solutions		
Course Outcome:		
<ul style="list-style-type: none">➤ To study different types of fluids and various governing equations of it.➤ To solve equations of the flow of viscous compressible and incompressible fluids.		

Unit-I

10 hours

Kinematics of Fluids, Methods describing Fluid motion. Legarangian and Eulerian Methods. Translation Rotation and Rate of Deformation. Streamlines, Pathlines and Streaklines. The Material derivative and Acceleration Vorticity in Polar and Orthogonal Curvilinear Coordinates.

Unit-II

10 hours

Fundamental equations of the flow of viscous compressible fluids, Equations of continuity, motion and energy is Cartesian coordinate systems.

Unit-III

10 hours

The equation of state. Fundamental equations of continuity, motion and energy in Cylindrical and Spherical coordinates.

Unit-IV

10 hours

2-D and 3-D in viscid incompressible flow. Basic equations and concepts of flow. Circulation theorems, Velocity potential, Rotational and Irrotational flows. Integration of the equations of motion. Bernoulli's Equation, The momentum theorem and the moment of momentum theorem. Laplace's equations in different coordinate systems. Stream function in 2-D motion.

Text Book:

S. W. Yuan: Foundations of Fluid Mechanics, Prentice-Hall of India. Chapters: 3, 5 (5.1 to 5.6), 7 (7.1 to 7.9).

Sub. Code: MATH E307	Abstract Measure and Probability-I	
Semester: III	Credit: 4	Elective Course
Pre-requisites: Basic concept in Probability and set theory		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To introduce the Measures on Boolean semi-Algebra and σ-algebra. ➤ To understand the several Distributions such as Binomial Distribution, Poisson Distribution and Normal Distribution and several Approximations to such Distribution. 		

Unit-I 10 hours

Sets and Events, Probability on Foslens Algebra, Probability Diminutions and Elementary Random Variables, Repeated Trials and Statistical Independence, Poisson Approximation to the Binomial Distribution, Normal Approximation to Binomial Distribution.

Unit-II 10 hours

Multivariate Normal Approximation to Multinomial Distribution, some applications of the normal approximation. Independent simple Random variables and central limit theorem, Conditional probability, Law of large numbers An application of the law of large numbers to a problem is Analysis.

Unit-III 10 hours

σ -algebra and Borel spaces, Monotone classes, Measures on Boolean semi-Algebra and Algebra Extension of Measure to σ -Algebra, Uniqueness of extensions of measures.

Unit-IV 10 hours

Extension and completion of measures, measures on matrix spaces, probability contents, the lebesgue measure on the Real line, Elementary properties of Borel Maps, Borel Maps into Matrix Spaces, Borel Maps on measure Spaces.

Text Book:

K. R. Parthsarathy: Introduction to probability and measure, MacMillan Company. Chapters: 1, 2, 3 (22, 23, 24).

Sub. Code: MATH E308	Fuzzy Sets and Fuzzy Logic
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Semester: III	Credit: 4	Core Course
Pre-requisites: Sets, Functions and Relations		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To introduce Fuzzy sets versus crisp sets, types of Fuzzy set. ➤ To learn about Fuzzy Arithmetic, Fuzzy numbers, Fuzzy Relation. 		

Unit-I 10 hours

From Classical (CRISP) sets to Fuzzy sets: Fuzzy sets: Basic types, Basic concept. Fuzzy sets versus crisp sets: Additional properties of α -cuts, Representations of fuzzy sets, extension principle of fuzzy sets.

Unit-II 10 hours

Operations on Fuzzy sets: Types of operations, Fuzzy complements, Fuzzy intersections: t-norms, Fuzzy unions: t-conorms, Combinations of Operations, Aggregation operations.

Unit-III 10 hours

Fuzzy Arithmetic: Fuzzy numbers, linguistic variables, Arithmetic operations on Intervals and Fuzzy numbers, Lattice of Fuzzy numbers, Fuzzy equations.

Unit-IV 10 hours

Fuzzy Relation: Crisp versus Fuzzy relations, Projections and cylindric extensions, Binary Fuzzy relations, Binary relations on a single set, Fuzzy equivalence relations, compatibility relations and ordering relations, Fuzzy morphisms, Sup-i compositions of Fuzzy relations, Inf- w_i compositions of Fuzzy relations.

Text Book:

George J. Klir & Bo Yuan: Fuzzy sets and Fuzzy Logic: Theory and Applications, Prentice Hall PTR under Saddle River, New Jersey 07458.

Reference Books:

1. S. K. Pundir and R. Pundir: Fuzzy sets and their applications, A Pragati Editions, 8th Editions.
2. A. K. Bhargava: Fuzzy set theory fuzzy logic and their applications, S. Chand & Co, New Delhi.

Sub. Code: MATH E309	Mathematical Statistics	
Semester: III	Credit: 4	Core Course
Pre-requisites: Basic knowledge in probability theory		

Course Outcome:

- To solve the probability problems of discrete and continuous random variables.
- To solve the probability problems of probability distribution and generating functions.

Unit-I

10 hours

Elements of Theory of Probability : Classical definition of probability, Theorems on probability of union of events, Conditional probability : Theorem of compound probability, Independence of events, The Bayes Theorem, Statistical and empirical definition of probability, Geometric probability, Axiomatic definition of probability, Conditional probability (Axiomatic definition of probability).

Unit-II

10 hours

Probability distribution on R : Random variables, probability distribution of a random variables, discrete and continuous random variables, independent random variables, lebesgue-stieltjes integrals, Integration of a random variables.

Unit-III

10 hours

Some characteristic of probability distribution: Expectation, Moments, some inequalities concerning moments, Different measures of central tendency, measures of dispersion, Measures of skewness and kurtosis, some probability inequalities.

Unit-IV

10 hours

Generating functions: probability generating function, Moment generating function, Factorial generating function, Cumulant generating function, characteristic function, Exercises, Some discrete distribution on R : The discrete uniform distribution, the Bernoulli distribution, the binomial distribution, The hypergeometric distribution, The Poisson distribution, The geometric distribution, The negative binomial distribution, The power series distribution.

Text Book:

Parimal Mukhopadhyay: Mathematical Statistics, Books and Allied (P) Ltd. Kolkata. Chapters: 1, 2, 3, 4 and 5.

Reference Books:

1. Robert V. Hogg and Allen T. Craig: Introduction to mathematical statistics, Pearson Education Asia, Indian Branch :482 F.I.E Pratapganj, Delhi 110092
2. John E. Freund and Ronald E. Walpole: Mathematical statistics, Prentice Hall India Pvt. Ltd. New Delhi-110001.

Sub. Code: MATH VAC310	An Introduction to LATEX	
Semester: III	Credit: Nil	Non-Credits Course
Pre-requisites: Knowledge about computer programming.		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To be capable to write a research article in LaTeX. 		

Unit-I 10 hours

Basics: Introduction to LaTeX, Text, Symbols and Commands, Document layout and organization, displayed text.

Unit-II 10 hours

Mathematical formulas, Graphics inclusion and color.

Unit-III 10 hours

Floating tables and figures, User customizations.

Unit-IV 10 hours

Beyond the Basics: Document management, Postscript and PDF, Bibliographic data bases and BiBTeX, Presentation material.

Text Book:

Helmut Kopka & Patrick W. Daly: A Guide to LATEX and Electronic Publishing (Fourth Edition), Addison-Wesley Longman Ltd. Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15.

Sub. Code: MATH CT300	Mathematical Methods	
Semester: III	Credit: 4	CBCT Course
Pre-requisites: knowledge of sets, functions, limit, differentiation, Interpolation		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To solve functions using limit, differentiation. ➤ To obtain the interpolating polynomial by using different methods. ➤ To solve numerical integration by using various numerical methods. 		

Unit-I 10 hours

Transcendental and polynomial equations: Introduction, Bisection method, Iteration methods based on first degree equation, Rate of convergence of Secant method, Regula-Falsi method, Newton-Raphson method; System of Linear Algebraic equations: Introduction, Direct methods, Cramer Rule, Gauss elimination method, Gauss-Jordan

elimination method.

Unit-II 10 hours

Interpolation & Approximation: Introduction, Lagrange and Newton interpolations, finite difference operators, Interpolating Polynomials using finite differences, Hermite Interpolation, Piecewise and spline interpolation.

Unit-III 10 hours

Limit and Continuity of real valued functions.

Unit-IV 10 hours

The Derivatives, Maxima and Minima.

Text Books:

1. M. K. Jain, S. R. K. Iyengar and R. K. Jain: Numerical Methods for Science and Engineering Computations (4th Edition), New Age International Publishers, 2003. Chapters: 2(2.1 to 2.3, 2.5), 3(3.1, 3.2), 4(4.1 to 4.6).
2. Shanti Narayan and M. D. Raisinghania: Elements of Real Analysis, S. Chand & Company Pvt. Ltd., New Delhi. Chapter: 8(8.1 to 8.21), 9(9.1 to 9.6), 11(11.1 to 11.4).

FOURTH SEMESTER

Sub. Code: MATH C401	Functional Analysis-II	
Semester: IV	Credit: 4	Core Course
Pre-requisites: Basics concepts in convergence of sequence and inner product spaces.		
Course Outcome:		
<ul style="list-style-type: none">➤ To learn the Weak and Weak *convergence Reflexivity.➤ To Normal, Unitary and Self-Adjoint Operators.		

Unit-I 10 hours

Weak and Weak *convergence Reflexivity.

Unit-II 10 hours

Inner product spaces, Orthonormal sets.

Unit-III 10 hours

Approximation and Optimization Projection and Riesz Representation Theorems.

Unit-IV

10 hours

Bounded Operators and Adjoints, Normal, Unitary and Self-Adjoint Operators.

Text Book:

B. V. Limayee: Functional Analysis, New Age International Ltd. (2nd Edition).
Chapters: 15, 16 (16.1 to 16.3), 21, 22, 23, 24, 25 and 26 (26.1 to 26.5).

Sub. Code: MATH C402	Number Theoretic Cryptography-II	
Semester: IV	Credit: 4	Core Course
Pre-requisites: Basic ideas of RSA, Factorization in finite fields, primes.		
Course Outcome:		
<ul style="list-style-type: none">➤ To solve the Discrete log problems by using Silver-Pihlog-Samir method and Knapsack problems.➤ To find the factor of large number.		

Unit-I

10 hours

Discrete log, Knapsack.

Unit-II

10 hours

Zero knowledge protocols and oblivious transfer, pseudo primes.

Unit-III

10 hours

The rho method, Fermat factorization and factor bases.

Unit-IV

10 hours

The continued fraction method, The quadratic sieve method.

Text Book:

Neal Koblitz: A Course on number theoretic Cryptography, Springer Verlag, GTM No. 114 (1987). Chapters: 4(4.3, 4.4, 4.5), 8.

Reference Book:

J. Menezes. P. C. Van Oorschot and Scott A. Vanstone: Hand Book of Applied Cryptography, CRC Press (1997).

Sub. Code: MATH D408	Dissertation	
Semester: IV	Credit: 4	Core Course
Pre-requisites: All semester theory.		

Course Outcome:

- To acquire knowledge for writing research proposal for pursuing higher studies in mathematics.

Course Details:

Chapter	Contents	Hours
1	Literature Review	15
2	Learning objectives	15
3	Dissertation work	150
4	Report writing in proper format	20
Total		200

NB: 1. The students will be informed regarding their supervisors. Each student has to work for at least 200 hours for writing his/her dissertation under the guidance.

2. The research work will be submitted in the form of a dissertation before one week of last theory examination/as instructed by HOD. The student has to present his work in power point before the External examiner and internal examiners for evaluation.

Sub. Code: MATH E403	Optimization Techniques-II	
Semester: IV	Credit: 4	Core Course
Pre-requisites: Basic knowledge in operation research		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To solve the quadratic programs by using Wolfe's algorithm, Beales Algorithm, Fletchers method. ➤ To solve the non linear programs by using Frank-Wolfe's method, Reduced gradient method and Kelley's cutting method. ➤ To solve the Geometric programming. 		

Unit-I 10 hours

Quadratic program, Wolfe's algorithm, Beales Algorithm, Fletchers method.

Unit-II 10 hours

Dual quadratic program, Complementarity problem.

Unit-III 10 hours

Nonlinear programming methods: Frank-Wolfe method, Reduced Gradient method, Kelley's cutting plane method.

Unit-IV 10 hours

Geometric programming: Proto type primal and dual Geometric Programs, Reduction to proto type Geometric program, Dynamic Programming: Principle of optimality, Reliability of system in series, Height of projectile, Cargo-Loading problem, Inventory problem.

Text Book:

N. S. Kambo: Mathematical Programming , Affiliated EWP Pvt Ltd, New Delhi. Chapters: 10(10.1 to 10.5, 10.8), 11(11.1 to 11.3), 12 (12.1 to 12.2), 15 (15.1 to 15.5).

Sub. Code: MATH E404	Ordinary Differential Equations -II	
Semester: IV	Credit: 4	Elective Course
Pre-requisites: Basic knowledge in ordinary differential equations and its solutions		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To analyze the stability of Nonlinear Systems of first order ordinary differential equations. ➤ To explain the oscillatory solutions of Nonlinear Differential Equations. 		

Unit-I 10 hours

Analysis and Methods of Nonlinear Differential Equations.

Unit-II 10 hours

Boundary Value Problems.

Unit-III 10 hours

Oscillations of Second Order Equations.

Unit-IV 10 hours

Stability of Linear and Nonlinear, Systems: Elementary Critical Points, System of Equations with constant coefficients, linear Equations with constant coefficients, Stability of Linear and Nonlinear Systems (continued) Lyapunov stability, stability of Quasi-linear systems, Second Order Linear Differential Equations.

Text Book:

S. G. Deo. V. Lakhsmikantham, V. Raghavendra: Text Book of Ordinary Differential Equations (2nd Edition), Tata Mc Graw Hill Publishing Company Ltd. New Delhi. Chapters: 6, 7, 8, 9.

Sub. Code: MATH E405	Matrix Transformations in Sequence Spaces -II
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Semester: IV	Credit: 4	Elective Course
Pre-requisites: Convergent and divergent of sequence and series.		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To demonstrate the universal Tauberian Theorem, some special types of matrices. ➤ To understand the summability theory. 		

Unit-I 10 hours

Strongly Regular Matrices: Some Matrices of a special Type, A universal Tauberian Theorem.

Unit-II 10 hours

Bounded sequence, Uniformly limitable sequence, Intersection of Bounded Convergence Fluids.

Unit-III 10 hours

Set of Matrices, Bounds on Limits of sequences, Matrix Norms, Pairs of consistent matrices.

Unit-IV 10 hours

Matrix and linear transformations Algebras of matrices, Summability, Tauberian theorems.

Text Books:

1. O. M. Peterson: Regular Matrix Transformations, Chapters: 3 (8.4 and 3.5), 4.
2. I. J. Maddox: Elements of Functional Analysis, Cambridge University Press, Chapter: 7.

Sub. Code: MATH E406	Fluid Dynamics-II	
Semester: IV	Credit: 4	Elective Course
Pre-requisites: Basic ideas in nonlinear ODE and PDE		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To understand nonlinear Navier-Stokes equations of motion and its solutions. ➤ To learn about the various types of flow of fluid through different mediums. 		

Unit-I 10 hours

Laminar flow of viscous incompressible fluids, Similarity of flows, The Reynolds number,

Flow between parallel flat plates, Couette flow, plane Poiseuille flow, Steady flow in pipes, The Hagen-Poiseuille flow, Flow between two coaxial cylinders*.

Unit-II

10 hours

Flow between two Coaxial rotating cylinders. Steady flow around a sphere Theory of very slow motion. Unsteady motion of a flat plate.

Unit-III

10 hours

The laminary boundary layer. Properties of Navier-Stokes equations. The boundary layer, equations in 2-D flow. The boundary layer along a flat plate. Boundary layer on a surface with pressure gradient, Momentum integral theorems for the boundary layer.

Unit-IV

10 hours

Von Karman-Pohlhausen method. Boundary layer for axially symmetrica' flow. Separation of boundary layer flow. Boundary layer control. Separation prevention by boundary layer suction, The origin of turbulence. Reynolds modification of the Navier-Stokes equations for trubulent flow. Reynolds equations and Reynolds stresses, PrandtPs mixing length theory. The universal velocity profile near a wall. Turbulent flow in pipes, Turbulent boundary layer over a smooth flat plate.

Text Book:

S. W. Yuan: Foundations of Fluid Mechanics, Prentice-Hall of India. Chapters: 8 (8.1 to 8.3, 8.7 to 8.8), 9, 10.

Sub. Code: MATH E407	Abstract Measure and Probability -II	
Semester: IV	Credit: 4	Elective Course
Pre-requisites: Vector spaces, Integration and differentiation,		
Course Outcome:		
<ul style="list-style-type: none"> ➤ To know about Riemann and Lebesgue Integrals of different functions and probability measure on R^n. ➤ To understand the convolution theory on L_p spaces. 		

Unit-I

10 hours

Integration of non-negative Functions, Integration of Borel Functions, Riemann and Lebesgue Integrals.

Unit-II

10 hours

Riesz Representation theorem, some Integral Inequality.

Unit-III 10 hours

Transition Measures and Fubinis theorem, convolution of probability measure on \mathbb{R}^n
Lebesgue measure on \mathbb{R}^n

Unit-IV 10 hours

Convolution Algebra $L_1(\mathbb{R}^n)$ approximation on L_p spaces with respect to Lebesgue Measure on \mathbb{R}^x , Elementary properties of Banach spaces, projections in Hilbert space, orthogonal sequences.

Text Book:

K. R. Parthasarathy: Introduction to probability and measure, MacMillan Company.
Chapters: 4 (except 4.30, 4.31), 5, 6 (6.40 to 6.42).

Sub. Code: MATH AC409	Cultural Heritage of South Odisha	
Semester: IV	Credit: Nil	Non-Credits Course
Pre-requisites: Know about Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of Ganjam.		
Course Outcome:		
<ul style="list-style-type: none">➤ To acquire a valuable understanding of the literary and cultural heritage of South Odisha.➤ To promote the literature and culture of Odisha on a global scale.		

Unit-I 10 hours

Literary works of Kabi Samrat Upendra Bhanja

Unit-II 10 hours

Other Litterateurs of South Odisha.

Unit-III 10 hours

Cultural Heritage of South Odisha.

Unit-IV 10 hours

Folk and Tribal Traditions of South Odisha.

Text Book:

Assessment and Expectations from Class: Mentor-Mentees class, attendance, discipline, punctuality, doubt clearing class.

Model Questions Paper:

MA/M.Sc.-Math-

YEAR

Time : 3 hours

Full Marks: 80

Answer from both the Sections as per direction.

The figures in the right-hand margin indicate marks

(Paper:)

SECTION -A

1. Answer **all** questions from the following : 2×10
- (a)
 - (b)
 - (c)
 - (d)
 - (e)
 - (f)
 - (g)
 - (h)
 - (i)
 - (j)

SECTION -B

2. Answer **all** questions : 15×4
- (a) OR
 - (b)
- 3.
- (a) OR
 - (b)
- 4.
- (a) OR
 - (b)
- 5.
- (a) OR
 - (b)

BERHAMPUR UNIVERSITY

Syllabus

For

Two Years M.Sc. Program

2023-24



P.G. Department of Physics

Berhampur University,

Berhampur-76007 (Odisha)

2023

M.SC. PHYSICS SYLLABI
BERHAMPUR UNIVERSITY BHANJA BIHAR,
BERHAMPUR-760007

1	Course	Course title	Hrs per Week	Credit	Exam Hrs	Marks		Total
						Mid Sem	End sem	
I	PHY-C 101	Mathematical Methods in Physics	4	4	3	20	80	100
	PHY-C102	Classical Mechanics	4	4	3	20	80	100
	PHY- C103	Computer Programming And Numerical Analysis	4	4	3	20	80	100
	PHY-C104	Quantum Mechanics-I	4	4	3	20	80	100
	PHY- P105	Computer Programming In Physics(Practical)	12	6	6	20	80	100
		Total	28	22				500
II	PHY- C201	Classical Electrodynamics	4	4	3	20	80	100
	PHY- C202	Statistical Mechanics	4	4	3	20	80	100
	PHY- C203	Basic Solid-State Physics	4	4	3	20	80	100
	PHY- C204	Quantum Mechanics-II	4	4	3	20	80	100
	PHY-P205	Optics(Practical)	12	6	4	20	80	100
	PHY-VAC206	Material Characterization Technique OR DFT and Materials Modelling						
		Total	28	22				500

III	PHY- C301	Relativistic Quantum Mechanics & Field Theory	4	4	3	20	80	100
	PHY- C302	Electronics	4	4	3	20	80	100
	PHY- E303 A OR PHY- E303B	Condensed Matter & Materials Physics-I Or Nuclear Science-1(N.P.)	4	4	3	20	80	100
			4	4	3	20	80	100
	PHY- EP304	Modern Physics(Practical)	12	6	4	20	80	100

	PHY-VAC305	Optical Fiber Sensor Or Fiber Optics Or Atomic And Molecular Spectra						
	PHY- CT300	Fibre Optics And Optoelectronics	04	04	03	20	80	100
		Total	28	22				500
IV	PHY- E401A OR PHY-E401B	Elementary Particle Physics Or GTR	4	4	3	20	80	100
			4	4	3	20	80	100
	PHY- C402	Basic Nuclear Physics	4	4	3	20	80	100
	PHY-CE403	Project And Seminar	4	4			50	100
							50	
	PHY- CE404A OR PHY- CE404B	Condensed Matter &Materials Physics II Or Nuclear Science-II	4	4	3	20	80	100
			12	6	4	20	80	100
	PHY- CE405A OR PHY- CE405B	Condensed Matter &Materials Physics(Practical) Or Nuclear Science (Practical)	12	6	4	20	80	100
	PHY- AC406	Cultural Heritage Of South Odisha.						
		Total	28	22				500
		Grand total	112	88				2000

Note: C: Core paper, P: Practical, E: Elective, S: Seminar, VAC: Value added course, CT: Credit transfer

A student has to register for 14 core papers (including three core labs), 6 elective papers (including one lab in elective), and one project and seminar, two value added courses

Programme Outcome:

- Instil among the students an attitude of being inquisitive so that they are capable of independent and critical thinking.
- Train up the students in such a way that they can objectively carry out investigations, scientific and/or otherwise, without being biased or without having any preconceived notions.
- Equip the students with such skills to make them understand the mysteries of nature at different scales of space and time, from subnuclear to cosmological.
- Enable the students to analyze problems starting from first principles, evaluate and validate experimental results, and draw logical conclusions.
- Prepare the students to pursue research careers, careers in academics, industries in Physical Science and allied fields.
- As technology exploits the rules of Physics, students properly trained in Physics can be good researchers in the Field of technology too.
- Imbibe effective scientific and/or technical communication abilities among the students.

First Semester

Sub Code: PHY- C101	Mathematical Methods in Physics	
Semester:1	Credit:4	Core Course
Pre-requisites: Basic understanding of real analysis, Complex numbers, Group theory		
Course outcome:		
<ul style="list-style-type: none"> ✓ To learn about various mathematical tools employed to study physics problems. ✓ To get good experience in using and understanding areas like complex variables, Tensor analysis, Group Theory and special functions. ✓ To strengthen the student's analytical abilities and help them formulate different relationships in mechanics and physics compactly. 		

Unit-1

12 hours

Complex Variables: Analytic functions, Contour integrals, Cauchy's integral theorem, Laurent's series, singular points, residues and the Residue Theorem, Evaluation of real definite and indefinite integrals by contour integration, Indented semi-circular contour, evaluation of single and multi-valued functions, branch points and branch cuts ,Contour integration involving branch point.

Unit -2

12hour

Tensors: Introduction, Types of tensor, Invariant tensor, epsilon tensor, Pseudo tensor, the algebra of tensor, Quotient law, Metric Tensor, Covariant derivative of tensor, Fundamental Tensor, Cartesian tensor, Christoffel symbol.

Unit -3

12 hours

Group Theory: Definitions of groups, subgroups and classes, Isomorphism, Homomorphism, Cayley's theorem, Group representations, Orthogonality theorem, characters, Orthogonality relation for group character, Character table, Preliminary idea about infinite group, calculation of generator, Calculation of generator associated with S.U. (2) and SO(3) group,

Unit -4

12 hours

Special Functions: Legendre Polynomials, generating functions, Recurrence formulae, Orthogonality properties of Legendre's polynomial of 1st kind, Bessel generating function, Bessel function of 1st and 2nd Kind, Recurrence formulae, Orthogonality properties of Bessel's polynomials, Spherical Bessel functions, Fourier and Laplace transformation.

Text books:

1. Mathematical Methods of Physics by Mathews and Walker (W. A. Benjamin Inc.)
2. Matrices and Tensors in physics by A. W. Joshi (New Age International Publisher)
3. Mathematical Methods in the physical Science by Mary L. Boas (Wiley- India)

Reference Books:

1. Mathematical Methods for Physicist by G. Arfken and H. Weber, Academic Press (Elsevier)
2. Elements of Group Theory by A. W. Joshi (New Age International Publisher)
3. Mathematical Physics by H. K.Das and Dr. R. Verma (S. Chand & Company L.T.D.)
4. Mathematical Physics by P. K. Chattopadhyaya (New Age International)

Sub. Code: PHY- C102		Classical Mechanics
Semester: 1	Credit: 4	Core Course
Pre-requisites: Basic understanding of generalized coordinate, Newtonian dynamics		
Course outcomes:		
<ul style="list-style-type: none"> ✓ To understand degrees of freedom and dynamics of a rigid body motion. ✓ To understand complex kind of gyroscopic motion as like heavy symmetric top. ✓ To make out a clear distinction of Lagrangian and Hamiltonian dynamics. ✓ To understand Hamiltonian dynamics and evolution of quantum mechanics. ✓ To understand small oscillation occurring in micro and macro-systems 		

Unit-1**10 hours****KINEMATICS OF RIGID BODY MOTION:**

Independent coordinates of a rigid body, Orthogonal transformations, Eulerian angles, infinitesimal rotations, rate of change of vector, Coriolis force, angular momentum and kinetic energy of motion about a point, inertial tensor and the moment of inertia, Eigen values of Inertial tensor and the principal axis transformation, methods of solving rigid body problems and Euler's equations of motion, torque free motion of a rigid body. Heavy symmetrical top with one point fixed.

Unit-2**10 hours**

HAMILTONIAN FORMULATION: Calculus of Variations and Euler-Lagrange's Equation, Brachistochrone Problem, Hamilton's Principle, Extension of Hamilton's Principle to Nonholonomic Systems, Legendre Transformation and the Hamilton Equations of Motion, Physical Significance of Hamiltonian, Derivation of Hamilton's Equations of Motion from a Variational Principle, Routh's Procedure, Principle of Least Action

Unit-3**10 hours**

CANONICAL TRANSFORMATIONS: Canonical Transformation, Types of Generating Function, conditions for canonical transformation, Integral Invariance of Poincare, Poisson Bracket, Poisson's Theorem, Lagrange Bracket, Poisson and Lagrange Brackets as Canonical Invariant, Infinitesimal Canonical transformation and Conservation Theorems, Liouville's Theorem Hamilton Jacobi Theory: Hamilton-Jacobi Equation for Hamilton's Principal Function, Harmonic Oscillator and Kepler problem by Hamilton-Jacobi Method, Action-Angle Variables for completely Separable System, Kepler Problem in Action-Angle Variables

Unit-4**10 hours**

SMALL OSCILLATION: Problem of Small Oscillations, Example of linear triatomic molecule and two coupled Oscillator, General Theory of Small Oscillations, Normal Coordinates and Normal Modes of Vibration.

Test Books:

1. Classical Mechanics- by H. Goldstein (Addison-Wesley)

Reference books:

1. Classical Mechanics by S. N. Biswas, Books and Allied Publisher Ltd.
2. Classical Mechanics by J.C. Upadhyay, Himalaya Publishing House.
3. Classical Mechanics by Landau and Liftshitz (Butter Worth)

Sub Code: PHY-C103	Computer Programming and Numerical Analysis	
Semester:1	Credit:4	Core Course
Pre-requisites: Basic knowledge of Computer ,Mathematical Physics		
Course outcomes:		
<ul style="list-style-type: none"> ✓ To understand the importance of computer application in Science and engineering. ✓ To learn and understand basic computer language FORTRAN 77. ✓ To compute and develop algorithms for solution of science and engineering problems. 		

Unit -1

10 hours

FORTRAN 77: Character, Data types, expressions, statements, input and output commands, do loop, condition and dimension statement, character and data managements, array manipulations, subprogram, and subroutine.

Unit -2. (Only Programming)

12 Hours

FORTRAN Programs: Evaluation of series, (Sin(x), Cos(x), tan(x), Log(x), $e^{\pm x}$, $\tan^{-1}(x)$ functions etc.), Matrix manipulation, finding the root of an equation by Newton-Raphson method, Numerical integrations by trapezoidal and Simpson method, finding prime numbers, Arrangement of numbers (increasing and decreasing order), interpolation (Newton's and Lagrange's method), Runge-Kutta method and similar other problems

.Unit -3

12 hours

Solution of simultaneous linear equations, Gaussian elimination, Pivoting, Iterative Method, Matrix Inversion, Root of a transcendental equation by Newton-Rapson Method, Least square fitting. Eigen values and eigenvectors of matrices, power and Jacobi method.

Unit -4

12 hours

Eigen values and eigenvectors of matrices, power and Jacobi method, Finite Differences, Interpolation with equally Spaced and unevenly spaced points (Newton's and Lagrange's method), Forward and Backward Interpolation, Extrapolation, Numerical Integration by trapezoid and

Simpson's rule, Solution of first and second order differential equation using Runge-Kutta (RK-4) method.

Text books:

1. Fundamentals of Computers by V. Rajaraman, Prentice Hall of India Ltd Publishers.
2. Fortran 77 and Numerical Methods by C Xavier, New Age International (P) Ltd Publishers.
3. Numerical Methods in Science and Engineering by S. Rajasekaran, S.chand

Reference Books:

1. Numerical Mathematical Analyses by J. B. Scarborough, Oxford and I.B.H. Publishing Company
2. Numerical methods for engineering and scientific computation by M K Jain (Wiley Eastern
3. Numerical Methods for Scientific and Engineering Computation by MK Jain,SRKIyengar andR Jain, New Age International (P) Ltd Publishers.

Sub Code: PHY- C104	Quantum Mechanics -1	
Semester:1	Credit:4	Core Course
Pre-requisites: : Basic Mathematical Physics		
<p>Course Outcomes:</p> <ul style="list-style-type: none"> ✓ To apply quantum mechanics to the dynamics of single particle in one-,two and three-dimensional potential fields ✓ To strengthen the analytical abilities of the student and help them to apply it in different branches of physics compactly. 		

Unit –1

14 Hours

GENERAL PRINCIPLES OF QUANTUM MECHANICS:

Postulates of Quantum Mechanics and meaning of measurement, Operators and their expectation values, .Dirac Notations,Linear vector space, Ket and Bra vectors, Scalar product of vectors and their properties, Dirac delta function, linear operators, Adjoint operators, Unitary Operators, Expectation values of dynamical variables and physical interpretation of Hermitian operators, Eigen values and eigen vectors, orthonormality of eigen vectors, probability interpretation, Degeneracy, Schmidt method of orthogonalization, Expansion theorem, Completeness and closure properties of the basis set, Coordinate and momentum representations, compatible an Incompatible observables, Commutator algebra, uncertainty relation as a consequence of non-

commutability, minimum uncertainty wave packet, Representations of Ket and Bra vectors and operators in matrix form, Unitary transformation of basis vectors and operators.

Unit –2

12 Hours

QUANTUM DYNAMICS:

Time evolution of quantum states, Time evolution operator and its properties, Schrödinger, Heisenberg and Interaction picture, Equations of motion, Operator method solution of Harmonic oscillator problem, Matrix representation and time evolution of creation and annihilation operators.

Unit-3

14 Hours

ROTATION AND ORBITAL ANGULAR MOMENTUM:

Rotation Matrix, Orbital angular momentum operators as generators of rotation, L_x , L_y , L_z and L^2 and their Commutation relations, Raising and Lowering operators (L_+ and L_-), L_x , L_y , L_z and L^2 in Spherical Polar coordinates, Eigen values and Eigen functions of L_z and L^2 (operator method), Matrix representation of L_x , L_y , L_z and L^2 .

Unit –4

12 Hours

SPIN ANGULAR MOMENTUM:

Spin $\frac{1}{2}$ particles, Pauli spin matrices and their properties, Eigen values and Eigen functions, Spin and rotations. Total angular momentum: Total angular momentum J , Eigen value problem of J_z and J^2 , Angular momentum matrices, Addition of angular momentum and C. G. coefficients for the states with (i) $j_1 = \frac{1}{2}$ and $j_2 = \frac{1}{2}$ (ii) $j_1 = 1$ and $j_2 = \frac{1}{2}$.

Text books:

1. " Quantum Mechanics: Concepts and Applications" by Nouredine Zettilé John Wiley and Sons.

Reference Books:

1. "Quantum Mechanics", L.I. Schiff L.I 3rd Ed, McGraw Hill Book Co.
2. "Quantum Mechanics" E. Merzbacher, 2nd Ed., John Wiley & Sons.
3. "Quantum Physics", S. Gasiorowicz John Wiley.
4. "A Text Book of Quantum Mechanics" by P.M. Mathews. and Venkatesan, Tata McGraw Hill.
5. Introduction to Quantum Mechanics, by D.J. Griffiths, 2nd edition, Pearson Publications

Sub Code: PHY- P105	Computer Programming and Numerical Analysis (Laboratory work)	
Semester:1	Credit:4	Core Course
Pre-requisites: Basic knowledge of computer		
Course Outcomes: <ul style="list-style-type: none"> ✓ To learn and practice basic computer language FORTRAN 77. ✓ To program different methods associate with Physics and Engineering 		

1. Numerical integration by trapezoidal method
2. Numerical integration by Simpson method
3. Solution of first and second order differential equation by RungaKutta Method
4. Matrix addition, subtraction, multiplication and manipulation
5. Matrix inversion
6. Finding the roots of an equation by Newton-Rapson method
7. Least square fitting of linear parameters
8. Determination of prime numbers.
9. To arrange a set of numbers in increasing or decreasing order
10. Sum of A.P and G.P series, Sine and Cosine series
11. Factorial of a number
12. Evaluation of log and exponentials by summing of series
13. Any other suitable experiments.

Second Semester

Sub Code: PHY- C201	: Classical Electrodynamics	
Semester:2	Credit:4	Core Course
Pre-requisites: Basic Mathematical Physics, (ii) Classical Electricity and Magnetism.		
Course Outcomes:		
<ul style="list-style-type: none"> ✓ To emphasize electric and magnetic radiation field phenomena and Bremsstrahlung radiation in a Coulomb field and Cherenkov radiation, ✓ Electromagnetic Scattering. 		

Unit –I

14 Hours

a. Covariant formulation of electrodynamics:

Lorentz transformation; Scalars, vectors and Tensors; Maxwells equations and equations of continuity in terms of A_μ and J_μ ; Electromagnetic field tensor and its dual; Covariant form of Maxwell's equations; Lagrangian for a charged particle in presence of external electromagnetic field and Maxwell's equation as Euler-Lagrange equations.

b. The Inhomogeneous Wave equation:

Wave equations for potentials, solution by Fourier analysis, Radiation field, Radiation energy, Hertz potential, Computation of radiation fields by Hertz method, electric dipole radiation, multipole-radiation.

Unit –II

12 Hours

a) **Lienard-Wiechart potential and Field of a uniformly moving electron:** Lienard-Wiechart potential, Fields of a charge in uniform motion, Direct solution of the wave equation, Convection potential, Virtual photon concept.

(b) Wave guides, Propagation of electromagnetic waves in rectangular wave guides.

Unit –III

14 Hours

Radiation from Accelerated Charges:

Radiation from an accelerated charge, Fields of an accelerated charge radiation at low velocity, Case of velocity parallel to acceleration, radiation from circular orbits, Radiation with no restrictions on the acceleration or velocity, Classical cross section for bremsstrahlung in a Coulomb field, Cherenkov radiation.

Unit –IV**14 Hours****Radiation, scattering and dispersion:**

Radiative damping of a charged harmonic oscillator, forced vibrations, scattering by an individual free electron, scattering by a bound electron, absorption of radiation by an oscillator, equilibrium between an oscillator and a radiation field, effect of a volume distribution of scatters, scattering from a volume distribution, Rayleigh scattering, the dispersion relation.

Text Book:

1. "Classical Electricity and Magnetism" by Wolfgang K.H. Panofsky and Melba Philips, Second Edition.

Reference books:

- 1 "Classical Electrodynamics", Jackson J D, John Wiley.
2. 'Introduction to Electrodynamics', Griffiths D J, Prentice Hall.

Sub Code: PHY-C202	Statistical Mechanics	
Semester:2	Credit:4	Core Course
Pre-requisites: Basic laws of thermodynamics		
Course Outcomes:		
<ul style="list-style-type: none"> ✓ To develop a working knowledge of statistical mechanics. ✓ To learn statistical interpretation of various phenomena like ensembles, ideal systems, photon gas, Low temperature physics and their applications, Bose Einstein condensation, phase transition. ✓ To explore its applications in other branches of physics like material science and the physics of condensed matter. 		

Unit -1**12 Hours**

Classical Statistical Mechanics: Postulates of classical statistical mechanics, Lowville's theorem micro-canonical ensemble, derivation of thermodynamics, equi-partition theorem, Classical ideal gas, Gibb's paradox, .canonical ensemble, energy fluctuation in canonical ensemble, grand canonical ensemble, density fluctuation in grand canonical ensemble, equivalence of canonical and grand canonical ensemble.

Unit -2**12 Hours**

Quantum Statistical Mechanics: Postulates of quantum statistical mechanics, density matrix, Liouville's theorem, ensembles in quantum statistical mechanics, third law of thermodynamics, Ideal gases in micro-canonical ensemble. Particle in a box, M.B., B.E. and F.D. distributions. The Ideal Gases in Grand Canonical Ensemble, Equation of state of Ideal Bose Gas, Fermi Gas.

Unit -3**12 Hours**

Fermi Gas: The Equation of state of an Ideal Fermi gas, High temperature and low Densities, Low temperature and High Densities, Theory of White Dwarf Stars, Pauli par magnetism.

Unit -4**12 Hours**

Bose Gas: Ideal Bose gas, Photon, Planck's law, Bose-Einstein condensation. 1st order and 2nd order phase transitions, Ginzburg landau theory of phase Transition, Ising model (one dimensional Ising model)

Text Book:

1. Statistical Mechanics – K. Huang, Wiley India

Reference books:

1. Statistical Mechanics – Landau and Lifshitz, ButterWorth
2. Statistical Mechanics- R. K. Patheria, P.D. Beale 3rd Ed, Butter Worth-Heinemann
3. Fundamental statistical and thermal Physics- F. Reif, Tata Mc Graw-Hill Edition
4. Elementary statistical mechanics, C. Kittel, Dover Publication

Sub. Code: PHY-C203	Basic Solid State Physics	
Semester: 2	Credit : 4	Core Course
Pre-requisites: Crystal structure, Bragg's Diffraction, Reciprocal lattice space		
Course Outcomes:		
<ul style="list-style-type: none"> ✓ To understand different bond mechanism. ✓ To understand evolution of phonon and its importance in electrical and thermal properties ✓ To understand F.E.M. and NFEM. ✓ To understand different class of solids. 		

Unit-1 **10 hours**
CRYSTAL BINDING: Crystals of inert gases, Ionic crystals, covalent crystals, Metals Lattice Dynamics-Vibrations of a mono atomic linear chain, Vibration of a diatomic linear chain,Dispersion relations, Acoustic and Optic modes, Long-wavelength limits.

Unit-2 **10 hours**
SPECIFIC HEAT OF INSULATORS AND FEM: Phonon heat Capacity, Debye model for density of states, Debye T³ law, Einstein's theory of the specific heat Free Electron Fermi gas-Energy levels in one-dimension, Effect of temperature on the Fermi-Dirac distribution function, Free electron gas in three dimension, Heat Capacity of the electron gas, Electrical conductivity and Ohm's law, Motion in magnetic fields, Static magneto-conductivity tensor, Hall effect, Thermal conductivity of metals, Wied man- Franz Law.

Unit-3 **10 hours**
NEARLY FREE ELECTRON MODEL: Nearly free electron model, origin of the energy gap, Bloch functions, Kronig-Penney model, Wave equation of electron in a periodic potential, restatement of Bloch theorem, solution of the central equation, approximate solution near a zone boundary, number of orbitals in a band, metals and insulators.

Unit-4 **10 hours**
SEMICONDUCTOR CRYSTALS: Band gap, Holes, effective mass, intrinsic carrier concentration, intrinsic mobility, impurity conductivity, donor states, acceptor states, thermal ionization of donors and acceptors. Defects, Impurity as defect, TM and RE impurities, Multiband Structure, Energy dispersion, Semiconductor and Magnetism, Compound Semiconductors, Different groups of semiconductors, Introduction to Diluted Magnetic Semiconductors. Moore's law, MR-logic Elements and Application.

Reference Books:

1. Introduction to the theory of Solid State Physics by J. D. Patterson (Addison-Wesley,1971)
2. Solid State Physics by N. W. Ashcroft and N. D. Mermin , (Harcourt Asia P.T.E. Ltd.)
3. Physics of Condensed Matter by Prasanta K. Misra (Academic Press, 2010)

QUANTUM MECHANICS-II		
Semester:204	Credit:4	Core Course
<p>Pre-requisites: Basic knowledge in Quantum mechanics-1 and Mathematics to handle model description based on physical laws</p>		
<p>Course Outcomes:</p> <p>✓ To learn the properties of molecules and atoms and their constituents—electrons, protons, neutrons, and other more esoteric particles such as quarks and gluons.</p>		

Unit-1

12 Hours

Motion in a spherically symmetric field:

The hydrogen atom, Reduction to equivalent one body problem, radial equation, Energy eigen values and eigen functions, Degeneracy, Radial probability distribution, free-particle problem, Expression of plane waves in terms of spherical waves. Bound states of a 3-D square well.

Unit-2

12 Hours

Approximate methods:

stationary perturbation theory, Rayleigh Schrodinger method for non-degenerate case, first and second order perturbation, an harmonic oscillator, general theory for the degenerate case, removal of degeneracy, linear Stark effect, normal Zeeman effect.

Unit-3

12 Hours

Variational method: Ground State, First Excited State and Second Excited State of One-Dimensional Harmonic Oscillator, Ground State of H-atom and He-atom.

W. K. B. method: Connection formulas, Bohr-Sommerfeld quantization rule, Harmonic oscillator and cold emission.

Time-dependent perturbation theory:

Transition probability, constant and harmonic perturbation, Fermi Golden rule

Unit-4**12 Hours****Scattering amplitude and scattering cross section:**

Born approximation, application to Coulomb and screened Coulomb potentials. Partial wave analysis for scattering, optical theorem, scattering from a hard sphere, resonant scattering from a square well potential. Identical particles, Symmetric and antisymmetric wave function, Scattering of identical particles.

Text Book:

1. "Quantum Mechanics: Concepts and Applications" by Nouredine Zettilé John Wiley and sons.

Reference Books:

1. "Quantum Mechanics", L.I. Schiff 3rd Ed, McGraw Hill Book Co. "Quantum Mechanics" E. Merzbacher, 2nd Ed., John Wiley & Sons. "Quantum Physics", S. Gasiorowicz John Wiley.
2. "A Text Book of Quantum Mechanics" by P.M. Mathews. and Venkatesan, Tata McGraw Hill. Introduction to Quantum Mechanics, by D.J. Griffiths, 2nd edition, Pearson Publications

Sub Code: PHY- P205	Optics (Laboratory work)	
Semester:1	Credit	Core Course
Pre-requisites: Basic knowledge of Optics		
Course Outcomes: To apply the principle of optics in experiments.		

1. Experiments with optical bench: Biprism Straight edge and narrow wire
2. Experiments with spectrometer: Single and Double split
3. Experiments with Michelson interferometer: Determination of λ and α Thickness of mica sheet
4. Fabry Perot interferometer Polarization Experiments Babinet compensator Edsar-Butler bands Quarter

wave plate Malus Law Study of elliptical polarized light

5. Constant Deviation Spectrography Calibration Zeeman effect

6. Babinet Quartz Spectrography

7. Any other suitable experiments

8. Any other experiments that may be set up from time to time

Course No. PHY- VAC206A	Course Name: Materials Characterization	
Semester: II	Non-Credit	V A C
Pre-requisites:		
Course Outcome: The course aims to give the theory and hands-on-training of the instruments facilities available at Berhampur University. This will help the students to understand the spectroscopic techniques required for characterization of materials synthesized in laboratory.		

Unit-1

10 Hours

UV-visible spectroscopy: Baseline correction with suitable solvent, blanking the instrument, determination of suitable concentration, quantitative measurement of sample of different concentration. Kinetic measurement of reaction to determine rate constant, spectral measurement of different compounds, data export in different format and plotting in origin. Other tips & things to watch out for when measuring particle size, Band gap measurement using Tauc plot.

Unit- 2

10 Hours

Photoluminescence spectroscopy: Determination of excitation and emission peak for unknown sample, choosing right filter for correct measurement, using solid sample as well as solution sample, measurement in fluorescence and phosphorescence mode for lanthanide doped sample as well as organic molecules. Life time measurement and calculation of life time in single and double exponential plotting in origin. Data export and plotting in origin. Other tips in PL measurement.

Unit-3

10 hours

X-Ray Diffraction Studies: Basic principles, Baseline correction, Crystal structure determination, Calculation of crystallite size from XRD data, Insertion of negative hkl indices in XRD graph, Calculation of d-spacing, lattice constant, crystalline mode, microstrain, dislocation density, Modified W-H plot for crystallite size/ microstrain and energy density.

Unit-4**10 hours**

Magnetic susceptibility Measurement: Elementary idea about magnetic properties of metal complexes, Diamagnetism, Para magnetism, Magnetic susceptibility and its measurement, Ferromagnetism, Ferrimagnetism and Anti-ferromagnetism.

Sub Code: PHY-VAC206B	DFT and Materials Modelling	
Semester:2	Non-Credit:	VAC
Pre-requisites: Quantum Physics, Mathematics and Computation		
<p>Course Outcomes:</p> <ol style="list-style-type: none"> 1. To understand a single atom and its behaviour independently. 2. To understand evolution of different properties dependent on density functional. 3. To understand different approximations leading to better exchange correlation. 4. To understand implementation of DFT on Quantum Espresso and codes 5. To evaluate numerically different physical properties. 		

Unit-1**10 hours**

Preliminaries: Atomic model, The hydrogen atom, Solution of Schrodinger Equation, Electron

wave functions and energies, Probability distribution. Multi-electron atoms, Hartree-Fock Theory, Free electron model(FEM), Nearly free electron model(NFEM)

Unit-2**10 hours**

The Schrodinger Equation, Density Functional Theory—From Wave Functions to Electron Density, Exchange–Correlation Functional, Localized and Spatially Extended Functions, Wave-Function-Based Methods, Hartree–Fock Method, Beyond Hartree–Fock. DFT Calculations for Simple Solids, Periodic Structures, Supercells, and Lattice Parameters, Face-Centered Cubic Materials, Hexagonal Close-Packed Materials, Crystal Structure Prediction, Phase Transformations,

Unit-3**10 hours**

Nuts and Bolts of DFT Calculations: Reciprocal Space and k Points, Plane Waves and the Brillouin Zone, Integrals in k Space, Choosing k Points in the Brillouin Zone, Metals—Special Cases in k Space, Summary of k Space, Energy Cutoffs, Pseudopotentials, Numerical Optimization, DFT Total Energies-An Iterative Optimization Problem, Geometry Optimization, Internal Degrees of Freedom, Optimizing Supercell Volume and Shape, Electronic Structure and, Electronic Density of States, Local Density of States and Atomic Charges, Magnetism

Unit-4

10 hours

Applications: **Quantum Espresso**, Materials Cloud, Examples: **Silicon**: Self-consistent Field, Writing the input, Running the code, Reading the output, lattice constant and bulk modulus of silicon, Bands, **Graphene**:, Compute the band-structure.

References: Books

1. A Practical Introduction to Density Functional Theory By L. Rademaker
2. Electronic Density Functional Theory Recent Progress and New Directions by John F. Dobson Giovanni Vignale and Mukunda P. Das.

Third Semester

Sub Code: PHY- C301	Relativistic Quantum Mechanics & Field theory	
Semester:3	Credit:4	Core Course
Pre-requisites: Quantum Mechanics, Special theory of relativity, Mathematical Physics and Electrodynamics.		
Course Outcomes:		
<ul style="list-style-type: none"> ✓ To study the effect of relativity on quantum mechanics and to develop the formulation for Relativistic systems along with the quantization principle. ✓ To introduce basic concept of Quantum field theory to understand the dynamics of relativistic systems through creation and annihilation operators 		

Unit-1

12Hours

Brief introduction to Relativistic quantum mechanics, Klein-Gordon equation and its drawbacks, Charge and current densities, Positive and negative energy states, Klein-Gordon equation in Presence of Electromagnetic field. Dirac Equation, Free particle Dirac equation, Properties of the Dirac matrices, Continuity Equation, Spin of the electron. Gordon Decomposition of Dirac Hamiltonian.

Unit -2

12 hours

Plain wave solutions of Dirac Equation, Normalization of the wave functions, Dirac Hole Theory ,Dirac equation in an electromagnetic field, , its non-relativistic correspondence, ,magnetic moment, Dirac equation in presence Spherically symmetric potential,Dirac Equation in Presence of Central force, spin-orbit coupling, Covariant form of the Dirac equation, Proof of its Lorentz covariance, Properties of the gamma-matrices. Bilinear covariant.

Unit -3

10 hours

Concept of fields, Classical field equation, Noether's theorem and conservation laws, Gauge invariance and charge conservation, Creation, Annihilation and number operators.

Unit -4

14 hours

Field Quantization: (a) neutral scalar meson field (b) charged scalar meson field (c) Dirac field.

Textbooks and reading materials:

1. Relativistic quantum field theory by J.D. Bjorken and S.D. Drell(McGraw-Hill Publisher).
2. Lectures on Quantum Field Theory, Ashok Das, (World Scientific Publishing Co.)
3. Lahiri A, Pal P.B., A First Book of Quantum Field Theory(Narosa Publishing House)
4. Quantum Mechanics and Field Theory by B.K. Agarwal (Asia Publishing House)

Sub Code: PHY-C302	Electronics	
Semester:1	Credit:4	Core Course
Pre-requisites: P.N. Junction. Network Analysis (Kirchhoff Laws)		
Course Outcomes: <ul style="list-style-type: none"> ✓ To make the student familiar with basic analog and digital electronic components. ✓ Understand D.C. analysis and A.C. models of semiconductor devices ✓ Apply concepts for the design of Amplifier ✓ Understand number representation and conversion between different representations in digital electronic circuits ✓ Analyze logic processes and implement logical operations using combinational logic circuits. 		

Unit-1**12 Hours**

Network Analysis: Superposition principle Thevenin and Norton Theorems, BJT, FET, MOSFET: characteristic, biasing-parameter analysis Feedback Circuits. Operational Amplifiers: The differential amplifier, D.C. and A.C. signal analysis, integral amplifier, rejection of common mode signals, CMMR, The operational amplifier, input and output impedances, Application of operational Amplifiers unit gain buffer, summing, integrating amplifier, Comparator, Operational amplifier as a differentiator

Unit -2**8 Hours**

Oscillator circuits: **Feedback criteria for oscillation, Nyquist criterion, Phase shift, Wien-Bridge oscillator, Crystal controlled oscillator**

Unit-3

12 Hours

Digital Circuits: Logic fundamentals, Boolean theorem, logic gates: AND, OR, NOT, NOR,

NAND XOR, and EXNOR. RTL, DTL and TTL logic, Flip-flop, RS-and JK-Flip flop, A/D and D/A Convertors

Unit-4

12 Hours

Optoelectrics Device:

Principle of optical sources, Source material, Choice of materials, Internal and external quantum efficiency of L.E.D., Structures, Types of L.E.D.: Surface emitting L.E.D., Edge emitting L.E.D., Modulation capability, emission pattern, power bandwidth product, laser Diode Modes, Threshold condition, resonant frequency, Laser Diode Structure, Brief description of principle of optical detectors, Photomultipliers P.I.N. and A.P.D. configuration, Solar Cell

Textbooks and reading materials

1. Electronic fundamental and application by J.D. Ryder, PHI, Learning Pvt Ltd.
2. Electronics: Circuits and Analysis, D.C.Dubey, Alpha Science
3. R.P.Khare, Fiber Optics and Optoelectronics, Oxford University Press

References:

1. Foundation of electronics – Chattopadhyay, Rakshit, Saha and Purkait , New age International publisher
2. Electronics principles-Albert Malvino, Tata Mc Graw-Hill Edition
3. Modern Digital Electronics-R.P Jain, Tata Mc Graw-Hill Edition

Sub Code: PHY-C303A	Condensed Matter and Material Physics	
Semester:3	Credit:4	Core Course
Pre-requisites: Basic knowledge in solid state physics, Classical mechanics, Quantum mechanics and elementary mathematics to handle model description based on physical laws		
Course Outcomes:		
<ul style="list-style-type: none"> ✓ To provide an introduction to the physics of condensed Matters ✓ To make them acquainted with the areas like quantization of lattice vibrations, electron–electron interaction, superconductivity and Advanced Superconductivity. 		

Unit-1

12 Hours

Quantisation of lattice vibration: Phonons, normal coordinate transformation, creation and annihilation operators. Methods of band calculation-Tight binding method, O.P.W. and pseudo potential methods. Fermi Surface, de Haas-van Alphen effect. Transport theory-Boltzmann equation, relaxation time approximation, electrical conductivity and thermal conductivity.

Unit-2

12 Hours

Electron-electron interaction:Hartree approximation, Hartree-Fock approximation, Hartree-Fock theory for jellium model. Density functional theory-general formulation, Local Density Approximation. , General formalism of Screening, Thomas-Fermi Approximation.

Unit-3

12 Hours

Superconductivity: Occurrence of superconductivity, Meissner effects, Type- I and II superconductors, energy gap, Isotope effect, Theoretical survey: Thermodynamics of superconducting transition, London equations, coherence length, Qualitative ideas about the B.C.S. theory, Single particle tunneling, Josephson effect.

Unit-4

12 Hours

Advanced Superconductivity: Electron-phonon interaction, Microscopic theory of superconductivity, Quasi electrons, Cooper pairs, B.C.S. theory, Ground State of superconducting electron gas, elementary ideas of high T_c superconductors

Text Book:

1. Physics of Condensed Matter By Prasanta K. Misra(Academic Press, 2010)
2. Quantum Theory of Solid State by J.Callaway(Academic Press)

Reference books:

1. Principles of the theory of solids, J. M. Ziman(Cambridge and University press)
2. Solid State Physics by C. Kittel (John Wiley and sons, Ins Singapore)

3. Introduction to the theory of Solid State Physics by J. D. Patterson (Addison- Wesley,1971)
4. Intermediate Quantum Theory of Crystalline Solids by Alexander O.E. Animalu (Prentice Hall of India, 1978)

Sub Code: PHY-E303B	Nuclear Science-I	
Semester:1	Credit:4	Elective course
Pre-requisites: Basic Nuclear Science		

Course Outcomes:

- ✓ To understand the advance of Nuclear Physics

Unit-1 **12 Hour**

Rotation of Matrix and Tensor: Rotational invariance in three dimensions, eigen values a eigen functions of angular momentum operators, explicit representation of the rotation matrices Addition of angular momenta, Clebsch-Gordon coefficients, irreducible spherical tensor, matrix element of tensor operators, Wigner-Eckart theorem

Unit-2 **12 Hours**

Optical model: Optical model, deuteron stripping and pick-up reaction, Elementary ideas Brueckner theory

Unit-3 **12 Hours**

Collective Model: Collective Vibrational modes of a spherical nucleus, collective oscillation quadruple deformation, Expression for moment of inertia.

Unit-4 **12 Hours**

Rotational Spectra: Rotational spectra of even-even nuclei, coupling of a particle and collective motion, electric quadruple moments, magnetic dipole moments

Textbooks:

1. Nuclear Physics by R.R. Roy and B.P. Nigam, John Wiley

Reference Books:

1. Physics of the nucleus by M.A. Preston, Addison Wesley.
2. Nuclear Physics by S.S.M. Wong, Prentice Hall.
3. Introduction to Nuclear Physics by H. A. Enge, Addison Wesley
4. Structure of the Nucleus by M. A. Preston and R K Bhaduri, Addison Wesley

Sub Code: PHY- P306	Modern Physics (Laboratory work)	
Semester:1	Credit:4	Core Course
Pre-requisites: Basic knowledge of Modern Physics		
Course outcomes:		
✓ To design and analyze experiments in Modern Physics		

1. Determination of e/m by
 - I) Braun tube method
 - II) Magnetron Valve method
2. Determination of Planck's constant(h) by Photo-electric effect methods
3. Measurement of velocity of light by Lecher wire
4. G.M. counter experiments:
 - I) Characteristics of the Geiger tube
 - II) Inverse Square Law.
 - III) Absorption coefficient of the Aluminium foil.
5. Characteristics of Diode and Zener diode.

6. Study of logic gates AND, OR, NOT, NAND, NOR, EXOR .
7. Making AND, OR, NOT Gates using NAND Gates.
8. Verification of Boolean Algebra.
9. Verification of Dual nature.
10. Characteristics of F.E.T. (Field Effect Transistor).

Any other experiments that may be set up from time to time

Sub Code: PHY-E301	Fiber Optics and Optoelectronics	
Semester:4	Credit:4	Elective Course
Pre-requisites: Basic Physics at the higher secondary level		
Course outcomes: <ul style="list-style-type: none"> ✓ The objective of this course is to familiarize students the role of fiber optics in day today applications. ✓ To provide basic knowledge for designing simple experiment using L.E.D., Fiber and Detector 		

Unit- 1

12 Hours

Optical fiber: Optical fiber structure: Step Index Fiber, Graded Index Fiber, Transmission of light through cylindrical waveguide by using electromagnetic theory. Single mode and multimode fibers, modal concept, modes in step index and graded index fiber, V-number, power flow in Step Index fiber. Different types of fiber, Elementary idea on Fiber Materials, Fabrication method: Double Crucible Method, fiber optic Cables, Photonic crystal fiber and Fiber Bragg Grating

UNIT-2

10 Hours

Signal degradation in Optical Fiber: Attenuation, Absorption, bending Loss, Scattering Loss, Core Cladding losses, dispersion losses, Material dispersion, waveguide dispersion, Modal dispersion, Signal distortion in single mode fibers, Design of optimization of single mode fibers. Dispersion shifted and Dispersion flattened fiber.

Unit-3

08 Hours

Connector, Couplers and Splices: Connector and splice, losses during coupling between source fibers, fiber to fiber, Lensing scheme for coupling improvement, Joint losses, multimode fiber joints, single mode fiber joint, Fusion splice, Mechanical Splices, Multimode splices, connector and coupler

Unit-4**12 Hours**

Optical Source and Photodetector: Principle of optical sources, Source material, Choice of materials, Integral and external quantum efficiency of L.E.D., Structures, Types of L.E.D.: Surface emitting L.E.D., Edge emitting L.E.D., Modulation capability, emission pattern, power bandwidth product, laser Diode Modes, Threshold condition, resonant frequency, Laser Diode Structure, Brief description of principle of optical detectors, Photomultipliers P.N., P.I.N. and A.P.D. configuration, Photodetector noise, Noise sources, SNR, Detector response time

Textbooks:

1. R.P.Khare, Fiber Optics and Optoelectronics, Oxford University Press
2. Ajoy Ghatak and K. Thyagarajan, An Introduction to Fiber Optics, Cambridge University Press

Reference Books:

1. G. Keiser, Optical Fibre Communications, Mc-Graw-Hill.
2. J.M.Senior, Optical Fibre Communications Principles and Practice, PHI.

OR

Sub Code: PHY-VAC305A	Atomic and Molecular Spectra	
Semester:4	Non-Credit	VAC
Pre-requisites: Basic knowledge in Quantum Mechanics-I, Modern Physics, Basic Nuclear Physics		
Course outcomes:		
<ul style="list-style-type: none"> ✓ To understand different atomic models and their developments ✓ To learn behavior of atom and molecules in the presence of electric and magnetic field and molecular vibration. ✓ To understand atomic and molecular spectra 		

Unit-1**12 Hours**

Revision of Hydrogen atom; Bohr-Sommerfield Theory, quantum theory of hydrogen atom, wave functions, orbital and spin angular momentum, magnetic dipole moment, spin orbit interaction, fine structure, spectroscopic term and notation. Hydrogen fine structure. Spectrum of Helium.

Unit-2**12 Hours**

Hartrees' central field approximation, atomic orbital and Hund's rule. L.S and J.J Coupling

Unit-3**12 Hours**

Normal and Anomalous Zeeman effect, Explanations of Zeeman Effect in some transitions. Paschen-Bach Effect Stark-Effect: Weak field and strong field Starkeffect in hydrogen. Hyperfine structure and isotope effect, nuclear spin and hyperfine structure.

Unit-4**12 Hours**

Types of molecular spectra, Electronic spectra, Vibrational-Rotational spectra, molecule as a harmonic and non-harmonic oscillator, Pure Rotational Spectra, molecule as a rigid and non- rigid rotator .The Raman spectra and molecular structure.

Text Book:

1. Atomic and Molecular spectra : Laser by Raj Kumar
2. Introduction to atomic spectra by H. E. White

OR

Sub Code: PHY-VAC305B	ASTRONOMY AND ASTROPHYSICS	
Semester:3	Non-Credit:4	VAC
Pre-requisites: Basic knowledge in Quantum Mechanics-I, Modern Physics, Basic Nuclear Physics		
Course outcomes:		
<ol style="list-style-type: none"> 1. To understand Tools of Astronomy and celestial mechanics 2. To introduce basic astronomical principles in the study of the planets, stars and galaxies. 		

UNIT I:**15 Hours**

Celestial Mechanics and Astrometry: The celestial Sphere, Positions of stars, Proper motions of stars and planets, Distances of nearby stars.

Tools of Astronomy: Telescopes: Basic Optics, Optical Telescopes, Radio Telescopes, Infrared,

Ultraviolet, X-ray, and Gamma-Ray Astronomy – detectors and observatories Gravitational Waves detectors and Neutrino detectors All-Sky Surveys and Virtual Observatories.

UNIT II:

15 Hours

The Solar System: The Sun, The Physical Processes in the solar system, The Terrestrial and the Giant Planets, Formation of Planetary Systems.

Basic Stellar Parameters: The brightness of the stars, Color-magnitude diagrams (The HR diagrams), The luminosities of the stars, Angular radii of stars, Effective temperatures of stars, Masses and radii of stars: Binary stars, Search for Extrasolar Planets

UNIT III:

15 Hours

The Nature of Stars: Spectral classification, Understanding stellar spectra, Population II stars, Stellar rotation, Stellar magnetic fields, Stars with peculiar spectra, Pulsating stars, Explosive stars, Interstellar absorption

UNIT IV:

15Hours

Our Galaxy And The Interstellar Matter: The shape and size of our Galaxy, Interstellar extinction and reddening, Galactic coordinates, Galactic rotation, Stellar population, Inter Stellar Medium, The galactic magnetic field and cosmic

References:

1. Introduction to Stellar Astrophysics, Volume 1, Basic stellar observations and data, By Erika Bohm-Vitense, Cambridge University Press
2. An Introduction to Modern Astrophysics, Second Edition, By Carroll B.W., Ostlie D.A., Pearson Addison Wesley.
3. "Astrophysics for Physicists" by Arnab Rai Choudhuri, Cambridge University Press, 2010
4. Galactic Astronomy: Structure and Kinematics by Mihalas & Binney, W.H. Freeman & Co Ltd; 2nd Revised edition 1981.

Sub Code: PHY-VAC305C	OPTICAL FIBRE SENSOR	
Semester:3	Non-Credit:4	VAC
Pre-requisites: Basic knowledge in Quantum Mechanics-I, Modern Physics, Basic Nuclear Physics		
Course outcomes:		
<p>1. Identify different types of optical sensors and their performance characteristics - Analyze a given sensing requirement and design an appropriate sensor - Realize and implement an optimal sensing solution for a given requirement</p>		

UNIT-1

12 Hours

Need for optical sensors • Different types of Sensors • Optical receiver design; noise issues,

UNIT-II

12Hours

Amplitude Modulated sensors • Lock-in detection, Phase modulated sensors • Phase noise analysis and mitigation; Sensitivity limits, Wavelength modulated sensors •

UNIT-III

12Hours

Interrogator design, sensitivity limits, Polarization Modulated Sensors

UNIT-IV

12Hours

Analysis of current sensor, Distributed Fiber Sensors • Raman & Brillouin scattering-based sensors.

Reference:

1. R.P.KHARE, Oxford University Press

Fourth Semester

Sub Code: PHY- E401A	Elementary Particle Physics	
Semester:4	Credit:4	Elective Course
<p>Pre-requisites:</p> <ul style="list-style-type: none"> ✓ Basic knowledge in Quantum mechanics, ✓ Relativistic QuantumMechanics 		
<p>Course Outcomes:</p> <ul style="list-style-type: none"> ✓ The main goal of particle physics is to learn about the universe around us. ✓ Over the past half century, particle physicists have formulated the Standard Model, a beautiful framework that explains the visible universe from the smallest to the largest scales. 		

Unit-1

12 Hours

Historical introduction to the Elementary Particles, Classification of elementary particles and their interactions: Photons, Leptons, Quarks, Mesons, Baryons. Lepton number, Baryon number, color quantum number, Strangeness quantum number.

Unit-2

12 Hours

Charge independence of nuclear forces, Isospin, Test for isospin conservation, Associated Production of Strange particles, Gell-Mann Nishijima scheme, conservation laws in relation to particle reactions and decays.

Unit-3

12 Hours

Unitary Symmetry: SU (2), SU (3), Concept of I-Spin, U-Spin, V-Spin, SU(3) Quark model, The Eight-fold way, Mesons and Baryons in the Octet representation. The BaryonDecouplets, Evidence of color, Gell-Mann–Okubo mass formula.

Unit-4

12 Hours

Discrete Symmetry:

Parity (P): Parity in quantum mechanics and Field theories, Test of Parity. Time reversal (T): Time reversal in quantum mechanics and Field theories, Test of Time reversal Charge conjugation (C): Additive quantum number, Charge conjugation in field theories, Test of Charge conjugation. C.P.T. theorem and its consequences

Text Book:

1. "Introduction of Elementary Particles", D.Griffith , John Wiley
2. "Quarks and Leptons" Halzen, F. and Martin, A.D., John Wiley
3. "Gauge theory of Elementary Particle, T.-P. Cheng and L.-F.Li,Physics’’Oxford University Press
4. S Gasiorowicz ".Elementary particle physics" by. John Wiley & Sons .
5. Modern Elementary Particle Physics by G.Kane, Addison-Wesley Publishing Company
6. Mark Thomson "Modern Particle Physics"Cambridge University Press.

OR

Sub Code: PHY-E401 B	General Theory of Relativity (G.T.R.)	
Semester:4	Credit:4	Elective
Pre-requisites: : Tensor algebra, Quantum Mechanics		
Course outcomes:		
<ul style="list-style-type: none"> ✓ To learn about the advances in General Theory of Relativity. ✓ It will give the basic knowledge of Gravity as a geometry of space-time, gravitational waves and the formation of astrophysical objects. 		

Unit-1**12 hours**

Special theory of relativity: Lorentz transformations; 4-vectors, Tensors and its transformation properties, Contraction, Symmetric and antisymmetric tensors; 4-dimensional velocity and acceleration; four-momentum and four-force; Covariant equations of motion; Relativistic kinematics (decay and elastic scattering); Lagrangian and Hamiltonian of a relativistic particle.

Unit-2**12 hours**

The Equivalence Principle, The Weak and Strong Principle of Equivalence, The Equation of Motion in presence of Gravitational Forces, The affine connection, The Metric Tensor g_{uv} , Relation between Metric Tensor and Affine Connection, The transformation of Affine Connection, Covariant derivatives.

Unit-3**12 hours**

The Newtonian Limit: Relation between g_{00} and the Newtonian potential, Time Dilation in a Gravitational Field, Red shift of spectral lines, The Solar Red Shift.

Unit-4**12 hours**

Definition of Curvature tensor, Algebraic Properties of the curvature Tensor, Ricci Tensor and Curvature Scalar, Bianchi identities. Einstein's field Equations, Energy, Momentum and Angular momentum of gravitation.

Textbooks and reading materials:

1. Special theory of relativity, Robert Resnick (Oxford University)
2. Gravitation and Cosmology by Steven Weinberg (Jon Wiley and Sons) References:
3. Introducing Einstein's Relativity by Ray D Inverno (Clarendon Press)
4. An Introduction to General Relativity and Cosmology by Tail. Chow, (Springer)
5. Principles of Cosmology and Gravitation by M. Berry (Cambridge University)
6. Special theory of relativity, Robert Katz D. Van (Nostrond Company, I.N.C.

Sub Code: PHY-C402	Basic Nuclear Physics	
Semester:3	Credit:4	Core Course
Pre-requisites: Quantum mechanics (I and II), Electrodynamics, Mathematical Physics		
Course Outcomes:		
<ul style="list-style-type: none"> ✓ To understand the basic properties of Nucleus and Nuclear matter. ✓ To learn and understand about Deuteron, Scattering, Nuclear energy and Nuclear Model. ✓ To understand the application of Quantum mechanics in Nuclear physics and its correlation with Atomic and Particle Physics 		

Unit -1**12 Hours**

Nuclear properties: Nuclear Radius, Nuclear Mass and Binding Energy, Angular Momentum, Parity and Symmetry, Magnetic Dipole Moment and Electric Quadruple Moment.

Two nucleons Bound state problem: Central and non-central force, the deuteron, tensor forces, magnetic moment and quadruple moment of deuteron

Unit -2**12 Hours**

Nucleon scattering problem: n-p scattering at low energy, scattering cross section and scattering Length, effective range theory.

Nuclear force: Meson theory of nuclear force, Yukawa interaction

Unit-3**12 Hours**

Nuclear reaction and resonances, Breit-Wigner formula for s-waves, compound nucleus. Liquid drop model, Bohr-Wheeler theory of fission, nuclear fusion

Unit -4**12 Hours**

Single particle model of nucleus, magic numbers, spin-orbit coupling, angular moment and parities of nuclear ground states, magnetic moments and Schmidt lines, Collective model of Bohr and Mottelson.

Text Book:

1. Nuclear Physics by R.R. Roy and B.P. Nigam (John Wiley)
2. Nuclear Physics by D.G Tayal,Himalaya Publishing House
3. Nuclear Physics by S.N. Ghoshal,S.Chand

Reference books:

1. Physics of the nucleus by M.A. Preston (Addison Wesley)
2. Nuclear Physics by S.S.M. Wong (Prentice Hall)
3. Introduction to Nuclear Physics by H. A. Enge (Addison Wesley)

Reference books:

1. The Fundamentals of Atomic and Molecular Physics by L.Robert,Springer

Sub Code: PHY- E403	Project and Seminar	
Semester:4	Credit:4	PROJECT
Course outcomes:		
<ul style="list-style-type: none"> ✓ The main objective of this course is to work in a mini project , learn about how to prepare a research report and present before an audience. 		

Sub Code: PHY-E404A	Condensed Matter and Materials Physics	
Semester:4	Credit:4	Elective
Pre-requisites: Basic Solid State Physics		
Objectives: ✓ The main objective of this course is to learn about optical and magnetic properties of materials and their response to internal and external stimuli		

Unit-1

12 Hours

Optical properties: Absorption, intraband and inter band transition, Absorption spectra of materials, Luminiscence, Fluorescence, phosphorescence, Colour centres, Basic ideas of Absorption and Fluorescence Spectroscopy. Lasers-principles, Induced absorption, Spontaneous Emission and stimulated Emission, Einstein A and B Coefficients, Ruby laser, Helium-Neon Laser and Semiconducting Laser.

Unit-2

12 Hours

Magnetism: Langevin Diamagnetism and Van Vleck Paramagnetism, Paramagnet: Derivations of Curie law, Pauli paramagnetic susceptibility, Ferromagnetism: Curie point and the exchange interaction, Curie-Weiss law, Ferrimagnetic order, Curie temperature and susceptibility of ferrimagnets, Antiferromagnetic order, susceptibility below the Neel temperature.

Unit-3

Dielectric and Ferroelectric Properties

12 Hours

Maxwell equation and polarization, Macroscopic electric field, local electric field at an atom, Dielectric constant and polarizability, classical theory of electronic, ionic and orientation polarization, Clausius Mossotti Relation, Frequency dependence of polarization Structural phase transition, classification of ferroelectric crystal, Displacive Transitions: Soft optical phonon, Landau theory phase transition ,second and first order transition Anti-ferroelectricity and Piezoelectricity

Unit-4**12 Hours**

Novel Materials: Metallic nano clusters: Nano science and nano clusters, liquid drop model, size and surface volume ratio. Graphene: Graphene lattice, tight binding approximation, Dirac Fermions

Characterisation of materials: XRD, Bragg law, Laue conditions, Geometrical Structure factor and Atomic form factor, Basic principles of Electron Spin Resonance, N.M.R.. Basic principles of Raman Effect in crystals and Mossbauer techniques

Text Books:

1. Introduction to Solid State Physics , C. Kittel, John Wiley and Sons, Inc. Singapore
2. Optical Properties of Solids, Mark Fox, Oxford University Press
3. Physics of Condensed Matter- Prasanta K. Misra (Academic Press, 2010)

References:

4. Solid state Physics by Ashcroft and Mermin, Harcourt Asia PTE. Ltd. (A Harcourt publishers International company)

Sub Code: PHY-E404B	Nuclear Science-2 (Field Theory and Particle Physics)	
Semester:4	Credit:4	Elective
Pre-requisites: Quantum Field theory, Elementary Particle Physics and Mathematical Physics.		
Course outcomes:		
<ul style="list-style-type: none"> ✓ To learn the field theoretic techniques as applicable to the interacting elementary particles and to be conversant with the current status of particle physics. ✓ To learn the fundamental concept of spontaneous breaking on the basis of weak interaction along with decay width calculation. 		

Unit-1

12 hours

Field Theory:

Unequal space time commutation and anti-commutation rules for field operators. Propagator functions and their integral representations, Vacuum expectation values, Feynmann propagators, Concept of T-Product and Normal Product, Feynman diagram rules in coordinate and momentum space, Wick's Theorem, Properties of scattering matrix, Brief idea of electron- photon scattering.

Unit-2

12 hours

Particle Physics:

Brief review of elementary particles and their interactions, S.U. (3) Quark Model, The Baryon and Meson State, Baryon-Meson coupling: The F and D terms, Gell-Mann-OKubo mass formula. The Heavy Quarks: Charm and Beyond, S.U. (6) Quark Model: wave-function for Mesons and Baryons, Magnetic moment of Baryons.

Unit-3

12 hours

Weak Interaction : V-A form of weak interaction, μ Muon and Pion decay calculation, elementary notion of leptonic decays of strange particles, the Cabibbo angle, intermediate vector bosons, Elements of Neutral K-meson theory : Decay of Neutral K-mesons, regeneration of K-mesons, CP violation in neutral K decay.

Unit-4

12 hours

Spontaneous symmetry breaking, Higgs Mechanism, Brief idea of Salam-Weinberg Theory of Standard Model. Neutrino Physics: Neutrino Mass and Experimental limits, Neutrinoless Double-Beta decay, Neutrino oscillation, Solar neutrino puzzle, Magnetic moment of neutrino.

Textbooks and reading materials

1. Introduction to Elementary Particles by D.Griffiths, John Wiley & sons.
2. Relativistic quantum field theory by J.D. Bjorken and S.D. Drell, Mc Graw-Hill Book Company.
3. An Introductory Course of Particle Physics, Palas.B.Pal. C.R.C. Press.
4. Elementary particle physics by Gasiorwicz, Addison-Wesley publishing Company
5. Elementary Particle Physics by G.Kallen, Addison-Wesley publishing Company
6. Quarks and Leptons: F.Halzen and A.D.Martin, John Wiley.
7. A Modern introduction to particle physics : Fayyazuddin and Riazuddin, World Scientific, Singapore.

Sub Code: PHY-E405A	CONDENSED MATTER & MATERIALS PHYSICS (Laboratory work)	
Semester:1	Credit:4	Elective Course
Pre-requisites: Basic knowledge of Condensed Matter and Materials Physics		
Course outcomes: ✓ To design and analyze principles in Condensed Matter and Materials Physics.		

1. Determination of energy gap of a given semiconductor by four probe method
 2. Determination of Hall constant of a sample and its identification
 3. Determination of energy gap by p-n junction method
 4. Study of dispersion relation of an electric analog of mono atomic linear chain
 5. Study of dispersion relation of an electric analog of diatomic linear chain
 6. Determination of specific heat of a given sample using a thermocouple
 7. Determination of dielectric constant of a given sample by lecher wire method
 8. Determination of B-H curve of a given ferromagnet
- Any other experiments that may be set up from time to time.

Sub Code: PHY-P405B	Nuclear Science (Laboratory work)	
Semester:1	Credit:4	Elective Course
Pre-requisites: Basic knowledge of Condensed and Material Physics		
Course outcomes:		
✓ To design and analyze experiments in Nuclear Science		

1. Determination of half-life of unknown source
2. Determination of linear absorption coefficient
3. Verification of inverse square law
4. Experiment with gamma ray spectrometer
 - i. Energy analysis of unknown gamma source
 - ii. Spectrum analysis of ^{60}Co and ^{137}Co
 - iii. Activity of Gamma emitter
5. High resolution of gamma ray spectroscopy Energy resolution with Ge (Li) detector Photo pick efficiency for Ge(Li) detector

Any other experiments that may be set up from time to time

Sub Code: -VAC406	Cultural Heritage of Southy Odisha	
Semester:1	Credit:4	VAC
Pre-requisites:		
Course outcomes:		
✓ The teaching imparted to P.G students of Berhampur university on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire the valuable understanding of the same .		
✓ They will be inspired adequately to take the positive learnt from the course and use them in future in their personal literary and cultural pursuits and their by promote the literature and culture of the odisha on a Global Scale		

Unit I	Literary work of Kabi Samrat Upendra Bhanja
Unit II	Other Literatures of South Odisha

Unit III	Cultural Heritage of South Odisha
UNT IV	Folk and Tribal Traditions of South Odisha

Post Graduate Department of Zoology



Berhampur University
Bhanja Bihar, Berhampur, Ganjam, Odisha
Berhampur- 760007

M.Sc. Syllabus (2021-23)

Curriculum Overview (M.Sc.)

Distribution of Course (Semester wise)

- Semester I: Four (04) Core Courses and one Laboratory Course Work
- Semester II: Four (04) Core Courses, one Laboratory Course Work and one Value Added Course
- Semester III: One (01) Core Courses, Two (02) Electives, One (01) interdisciplinary choice elective, one (01) Laboratory Course Work and one (01) Value Added Course
- Semester IV: One (01) Core Courses, Three (03) Electives, Project, Dissertation and Viva, One (01) Add-on Added Course

Value Added Courses:

Two value added courses, (ZOOL VAC 206) and (ZOOL VAC 306), is offered by the Department respectively in the second and third semester. Value Added Course is not mandatory to qualify for any programme and shall be offered as non-credit course. Value Added Courses completed by a student shall be reflected in the mark sheet as “completed VAC” in the 2nd and 3rd semester. It is a teacher assisted learning course open to students of the department without any additional fee. However, students shall pay the prescribed examination fee and register along with other courses in that particular semester. Classes for a VAC to be reflected in the time table. The value-added courses shall be also conducted during weekends/vacation period. A student will be permitted to register only one Value Added Course in a Semester. The course can be offered only if there are at least 10 students opting for it.

Add-on Course

This course is offered in the 4th Semester by the Department of Odia, Berhampur University. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha

Scheme of Evaluation:

1. Each theory papers having 100 Marks is divided into 20 Marks of internal evaluation and 80 Marks of final examination in each semester.
2. The question pattern is mentioned below

P.G. Sample / Model Question Paper for CBCS pattern

Symbol _____

2022

Time : 3 hours

Full Marks : 80

The figures in the right hand margin indicate marks.
Answer from both the Sections as per direction

(Paper Title)

Section-A

1.	Answer all questions from the following:	(02x10=20)
(a)	Questions covering from ALL the unit	
(b)		
(c)		
(d)		
(e)		
(f)		
(g)		
(h)		
(i)		
(j)		

Section-B

Answer all questions (15x04=60)

3.	(a)	(Unit-I)
		OR
	(b)	Write Short Notes on: (a) (b)
4.	(a)	(Unit-II)
		OR
	(b)	Write Short Notes on: (a) (b)
5.	(a)	(Unit-III)
		OR
	(b)	Write Short Notes on: (a) (b)
6.	(a)	(Unit-IV)
		OR
	(b)	Write Short Notes on: (a) (b)

OR
(c) Case Study (wherever applicable)

M.Sc. Zoology General Course Framework & Structure

S.No	Paper No	Title	Credits	Proposed Marks
SEMESTER ONE				
1	ZOOL C 101	Biology of Non-Chordates	04	100
2	ZOOL C 102	Cytology and Inheritance Biology	04	100
3	ZOOL C 103	Biosystematics, Conservation Biology, Evolution and Ecology	04	100
4	ZOOL C 104	Biochemistry	04	100
5	ZOOL P 105	Laboratory Course Work-I	06	100
TOTAL			22	500
SEMESTER TWO				
1	ZOOL C 201	Biology of Chordates	04	100
2	ZOOL C 202	Molecular Biology	04	100
3	ZOOL C 203	Physiology, Endocrinology and Histology	04	100
4	ZOOL C 204	Ethology, Applied Ecology and Microbiology	04	100
5	ZOOL P 205	Laboratory Course Work-II	06	100
6	ZOOL VAC 206	Bioinformatics, Biosafety and Bioethics	NC	NC
TOTAL			22	500
SEMESTER THREE				
1	ZOOL C 301	Immunology and Histochemistry	04	100
2	ZOOL E 302	Entomology	04	100
3	ZOOL E 303	Bioinstrumentation and Biostatistics	04	100
4	ZOOL P 305	Laboratory Course Work-III	06	100
5	ZOOL CT 300	Conservation Biology *	04	100
6	ZOOL VAC 306	Human Nutrition	NC	NC
TOTAL			22	500
SEMESTER FOUR				
1	ZOOL C 401	Cytogenetics and Stress Physiology	04	100
2	ZOOL E 402	Epigenetics and Cancer Biology	04	100
3	ZOOL E 403	Applied Biology	04	100
4	ZOOL E 404	Developmental Biology and Radiation Biology	04	100
5	ZOOL D 405	Project, Dissertation and Viva-Voce	06	100
6	ZOOL AC 406	Cultural Heritage of South Odisha	NC	50
TOTAL			22	500
			88	2000

- Course offered for CBCT
- NC: Non Credit Value Added Courses

SEMESTER-I

Semester-One

ZOOL C 101

Biology of Non-Chordates


Credits:



Course Objectives: Objective of the paper is to provide brief idea about each taxon of the non-chordates with some important biological features.

Student Learning Outcomes: Students after completion of this course are expected to know about the non-chordate diversity, evolutionary relationship, and some basic aspects parasitism.

Course Coordinator: Mr. L.K. Murmu

Unit I Lower Invertebrates Lectures:16	<ol style="list-style-type: none">1. Locomotion, nutrition and reproduction in Protozoa2. Parasitic Protozoans with special reference to human host3. Origin of Metazoa, canal system in Porifera4. Polymorphism in Coelenterates, Ctenophora and its affinities
Unit II Higher Invertebrates Lectures:16	<ol style="list-style-type: none">1. Host-parasite interactions2. Coelom,metamerism and segmental organs of Annelida3. Parasitic adaptations in helminths4. Excretory structures and functions in annelids
Unit III Higher Invertebrates Lectures:16	<ol style="list-style-type: none">1. Structural organization and phylogenetic status of Limulus2. Parasitic castration with reference to the life cycle of Sacculina3. Larval forms in Crustaceans4. Structural organization and phylogenetic status of Peripatus
Unit IV Higher Invertebrates Lectures:16	<ol style="list-style-type: none">1. Respiration in Molluscs2. Torsion and de-torsion in Gastropoda3. Water vascular system of Echinoderms4. Larval forms in Echinodermata
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Invertebrate Zoology, R.D. Barnes2. The invertebrates, L.H. Hyman, Vol I to VI3. Invertebrate structure, Barrington, Nelson4. Invertebrate Zoology, R.L. Kotpal5. The Invertebrates: Function and Form, W. Sherman, V.G. Sherman6. A Text Book of Zoology, T.J. Parker, W.A. Haswell, Vol-I and II

Semester-One

ZOOL C 102

Cytology and Inheritance Biology

Credits



Course Objectives: Objectives of the paper is to provide basic idea about cell biology and inheritance pattern.

Student Learning Outcomes: Students after completion of this course are expected to know different cellular organelles and their functions, cell cycle regulations, basic inheritance pattern and basic gene mapping techniques.

Course Coordinator: Dr. S.K. Dash

Unit I Cytology-I Lectures:16	<ol style="list-style-type: none">1. Molecular organization of Cell membrane2. Membrane transporter: Structure and function3. Mechanism of membrane transports4. Cell-cell interactions
Unit II Cytology-II Lectures:16	<ol style="list-style-type: none">1. Structure and function of Cytoskeleton and its role in motility2. Structure, Biogenesis and function of Lysosome and Peroxisomes3. Endoplasmic Reticulum and compartmentalization of Golgi4. Structure and function of Mitochondria and protein targeting
Unit III Cytology-III Lectures:16	<ol style="list-style-type: none">1. Nucleus and nuclear transport2. Concept and organization of Gene and Chromosome3. Cell cycle and its regulations4. Cell Division and its regulation
Unit IV Mendelism Neo- Mendelism Lectures:16	<ol style="list-style-type: none">1. Mendelian Genetics2. Neo-Mendelism, Pleiotropy, genomic imprinting, penetrance and expressivity3. Linkage and crossing over4. Extra-chromosomal Inheritance, Pedigree analysis, Complementation tests
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. Molecular Cell Biology, Lodish, Berk, Kaiser, Krieger, Bretscher, Ploegh, Amon, Martin2. Molecular Biology of the Cell, Alberts <i>et al.</i>, (2008), Garland Science, New York, USA3. The cell: A molecular approach, Geoffrey, M. Cooper, R.E. Hausman (2004) ASM Press4. Cell and Molecular biology , Gerald Karp (2015)John wiley and sons5. Principles of Genetics, Snustad and Simmons, (4th Ed. 2005), John Wiley & Sons, USA6. Genetics, J. Russell, Benjamin-Cummings Publishing Company, California, USA

Semester-One

ZOOL C 103

Biosystematics, Conservation Biology, Evolution, and Ecology

Credits



Course Coordinator: **Dr. J. K. Seth**

Course Objectives: Objectives of the paper is to provide basic idea about classical and modern taxonomic approaches, Biodiversity and conservation of bio-resources, makes student aware about the evolutionary process and various components of ecosystem and their importance.

Student Learning Outcomes: Students after completion of this course are expected to get a holistic understanding of taxonomy, inculcate the value of natural environment and develop compassion toward bio-resources. Students are also expected to know the principle of evolutionary process and its application.

Unit I Biosystematics Lectures:16	<ol style="list-style-type: none">1. History of taxonomy and development of systematic, importance and application of systematic in biology, International code of zoological nomenclature (ICZN), concept of keys, type specimens2. Morpho-taxonomy, cyto-taxonomy, molecular-taxonomy, DNA bar-coding3. Species concept, IUCN red list of threatened species, Invasive species, Alien species, Indicator species, Keystone species, Umbrella species, Flagship species, Charismatic species4. Modes of collection and preservation of animals, Outline classification of animals
Unit II Bioconservation Lectures:16	<ol style="list-style-type: none">1. Biodiversity (genetic diversity, species diversity, ecosystem diversity) and its use, biodiversity hotspot in India.2. Measuring Biodiversity: alpha, beta and gamma diversity, Species Richness(S), Evenness(E), Simpson index(D), Shannon-Weiner Index (H')3. National Act and International Act related to Biodiversity Conservation4. In-situ conservation (Indian context) (Sanctuaries, National and Biosphere reserves) and Ex-situ conservation (Indian context) (Botanical gardens, zoos, cryopreservation, gene bank).
Unit III Evolution Lectures:16	<ol style="list-style-type: none">1. Theories of organic evolution (Lamarckism and Darwinism) and the Modern synthetic theory.2. Phylogenetic tree, molecular phylogeny inference using DNA and protein sequences3. Hardy-Weinberg Law4. Isolating mechanisms, and Speciation
Unit IV Ecology Lectures:16	<ol style="list-style-type: none">1. Ecosystem structure and characteristics2. Species Interactions3. Population characteristics and dynamics4. Community Ecology: Nature of communities; community structure and attributes; Ecological Succession
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. Principle of Animal Taxonomy; G.G. Simpson. Oxford IBH Publishing Company.2. Elements of Taxonomy. E. Mayer.3. Theory and Practice of Animal Taxonomy. V.C. Kapoor, Oxford & IBH Publishing Co.4. Evolution : Strickberger5. Evolutionary analysis : Herron and freeman6. Campbell Biology: Reece, Urry, Cain <i>et al.</i>7. Essential of Ecology: Miller and Spoolman

Semester-One

ZOOL C 104

Biochemistry

Credits



Course Objectives: Objectives of the paper is to provide basic idea about structure, and function of bio-molecules. The papers also focus on metabolism of Bio-molecules, basic idea about enzyme, its kinetics and regulation.

Student Learning Outcomes: Students after completion of this course are expected to know different bio-molecules, their biological functions and role of enzymes in cellular metabolism

Course Coordinator: Mr. L.K. Murmu

Unit I Biochemistry Lectures:16	<ol style="list-style-type: none">1. Composition, structure, types and function of carbohydrates2. Composition, structure, types and function of lipids and steroids3. Composition, structure, types and function of amino acids and proteins4. Conformation of proteins (Ramachandran plot, secondary structure)
Unit II Biochemistry Lectures:16	<ol style="list-style-type: none">1. Glycolysis and TCA cycle2. Oxidative phosphorylation, ETC and ATP synthesis3. Oxidation of Fatty acids4. Bioenergetics
Unit III Molecular Metabolism Lectures:16	<ol style="list-style-type: none">1. Alternative metabolism of carbohydrates (Gluconeogenesis and HMP Shunt)2. Metabolism of amino acids and Urea cycle,3. Biosynthesis of Cholesterol4. Vitamins
Unit IV Enzymology Lectures:16	<ol style="list-style-type: none">1. Enzyme structure and classification2. Principles of catalysis, enzyme kinetics, Michaelis-Menten Equation, Line-Weaver-Burke Equation3. Mechanism of enzyme action with special references to lysozyme4. Regulation of Enzyme action
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. Lehinger Principles of Biochemistry, D.L. Nelson, M.M. Cox, 07th Edition2. Biochemistry, J.M. Berg, L. Stryer, J.L. Tymoczko, G.J. Gatto, 08th Edition3. Harper's Illustrated Biochemistry, V.L. Rodwell, D.A. Bender, K.M. Botham, P.J. Kennely, P.A. Weil, 31st Edition4. Principle of Biochemistry, Voet and Voet5. Biochemistry, Campbell

Semester-One

ZOOL P 105

Laboratory Course Work-I

Credits



Course Objectives: Objectives of the paper is to provide 1) hands on exposure in collection, preservation and identification of invertebrates using basic taxonomic key, 2) observation and preparation of different slides related to cell biology 3) solving different problem related to inheritance biology, 4) construction of phylogenetic tree, and 5) Hand on experience on ecological adaptation and performing different biochemical experiments.

Student Learning Outcomes: Students will be able to know about collection, preservation, identification and drawing phylogenetic tree of organisms.

Course Coordinator:

Head, Department of Zoology

Biology of Non-Chordate, Cellular Biology & Inheritance Biology, Biosystematics, conservation Biology, Evolution and Ecology, Biochemistry	<ol style="list-style-type: none">1. Invertebrate Anatomy of preserved animals available in the market<ol style="list-style-type: none">a) Prawn (Nervous system & Statocyst)b) Cockroach (Nervous, reproductive & salivary systems)c) Squilla (Nervous system)d) Sepia (Nervous system)e) Loligo (Nervous system)f) Unio (Nervous system)2. Preparation of permanent slides (Specimen available)3. Identification with comments upon<ol style="list-style-type: none">a) Museum specimensb) Whole mount Specimensc) Permanent slides-Invertebrates4. Cytological preparations of chromosomes from onion root tip and grasshopper testes5. Demonstration of mitochondria by supravital staining in buccal epithelium6. Demonstration of Barr body in hair root and buccal epithelial cells7. Problem related to following aspect of genetics<ol style="list-style-type: none">a) law of independent assortmentb) Complementation testc) Sex linked inheritanced) Pedigree analysise) linkage map8. Collecting different local animals/ photographs (least concern category) and their classification using taxonomic keys9. Construction of phylogenetic tree using basic morphological features10. Construction of phylogenetic tree using 16s rRNA gene sequences retrieved from NCBI database11. Construction of phylogenetic tree using COI (Cytochrome c oxidase) gene sequences retrieved from NCBI database12. Practical related to evaluation of diversity indices: Species Richness(S), Evenness (E), Simpson index (D), Shannon-Weiner Index (H')13. Practical related to preparation of solution, buffer and measurement of pH14. Demonstration and handling of micropipette15. Biochemical (Qualitative) tests for-<ol style="list-style-type: none">a) Protein, glycogen, ascorbic acid, phosphorus, nucleic acidb) Tests for salivary amylase and invertase
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SEMESTER-II

Semester-Two

ZOOL C 201

Biology of Chordates

Credits



Course Objectives: Objective of the paper is to provide brief idea about each taxon of chordates with some important biological features.

Student Learning Outcomes: Students after completion of this course are expected to know the chordate diversity and some of the important features with respect to their evolutionary relationship.

Course Coordinator: **Dr. T.K. Barik**

Unit I Protochordates Lectures:16	<ol style="list-style-type: none">1. Biology and evolutionary significance of Hemichordates, Cephalochordates and Urochordates2. General organization, classification and affinities of Cyclostomata3. Structural organization of Petromyzon and its comparison with Myxine4. Origin of chordates
Unit II Superclass: Pisces Lectures:16	<ol style="list-style-type: none">1. Biology and affinities of Dipnoi and Latimeria2. Swim bladder and lateral line system in fishes3. Parental care in amphibian,4. Neoteny and metamorphosis in amphibian
Unit III Class: Reptilia and Birds Lectures:16	<ol style="list-style-type: none">1. Structural organization and phylogenetic significance of Sphenodon2. Adaptive radiation in reptiles3. Origin and evolution in birds4. Flight adaptation in birds
Unit IV Class: Mammalia Lectures:16	<ol style="list-style-type: none">1. Origin of mammal2. Aquatic mammals3. Prototheria and metatheria4. Dentition in Mammals
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Phylum Chordata, H. Newman2. The Life of Vertebrates, J.Z. Youn3. A Text Book of Zoology, T.J. Parker and W.A. Haswell, Vol. I and II

Semester- Two

ZOOL C 202

Molecular Biology

Credits



Course Objectives: The objectives of this paper is to provide comprehensive idea about the structure and function of nucleic acid and regulations of gene expression.

Student Learning Outcomes: Students after attending the course will understand role of bio-molecule involved in control and expression of genetic information and gene regulation at the level of transcription and translation in a better way.

Course Coordinator: Dr. P.K. Dixit

Unit I Nucleic Acids Lectures:16	<ol style="list-style-type: none">1. Structure of Nucleic acids2. DNA replication3. DNA damage and repair mechanism4. Recombination: Homologous and site-specific recombination
Unit II Molecular Synthesis Lectures:16	<ol style="list-style-type: none">1. Mechanism of Transcription2. Post Transcriptional modifications and RNA processing3. Protein translation4. Post- translational modification of proteins
Unit III Gene Regulation Lectures:16	<ol style="list-style-type: none">1. Prokaryotic gene regulation2. Eukaryotic gene regulations3. Topoisomerase, its role during replication and transcription4. Gene regulation and expression in viruses
Unit IV Gene Regulation Lectures:16	<ol style="list-style-type: none">1. Hormones and their receptors, cell surface receptor,2. General principles of cell communication, Signaling through G-protein coupled receptors,3. Second messengers signaling pathway4. Quorum sensing
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Molecular Cell Biology, Lodish, Berk, Kaiser, Krieger, Bretscher, Ploegh, Amon, Martin2. Cell Biology, G. Karp3. Cell and Molecular Biology, De Robertis4. Molecular Biology of the Cell, Alberts <i>et al.</i>, Garland Science, New York, USA

Semester- Two

ZOOL C 203

Physiology, Endocrinology and Histology

Credits



Course Objectives: Objectives of the paper is to provide basic idea about various physiological processes, endocrine system and basic aspect of Histology.

Student Learning Outcomes: Students after completion of this course are expected to learn basic histological features of important organ, the role of physiological processes and hormones involved in maintaining homeostasis.

Course Coordinator: Dr. S. K. Dash

Unit I Digestion, Excretion, and Circulation Lectures:16	<ol style="list-style-type: none">1. Digestive System: Secretory function of alimentary canal, Digestion, absorption2. Physiology and Biochemistry of Blood coagulation.3. Excretory System: Nephron, Mechanism of Unin formation, and Osmoregulation.4. Cardiovascular System: Double circulation, cardiac cycle
Unit II Nerve Conduction and Sense Organs, Respiration, and Thermoregulation Lectures:16	<ol style="list-style-type: none">1. Respiratory System: Mechanism of breathing, exchange of gases and its regulation2. Nervous System: Neurons, synapse and synaptic transmission and mechanism of nerve conduction.3. Sense Organs: Vision, hearing and taste4. Types of muscle and mechanism of muscle contraction.
Unit III Endocrinology Lectures:16	<ol style="list-style-type: none">1. Structure, chemistry and function of Pituitary glands2. Structure, chemistry and function of Thyroid and para-thyroid gland3. Structure, chemistry and function of Pancreas and Adrenal gland4. Mechanism of hormone actions
Unit IV Histology Lectures:16	<ol style="list-style-type: none">1. Structure and function of epithelial tissue and connective tissue2. Cell adhesion and cell adhesion molecules3. Histological details and functions of liver4. Histological details and functions of Spleen & Kidney
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Endocrinology, Hadley2. Endocrinology, Turner and Bagnora3. Comparative Vertebrate Endocrinology, P.J. Bentley4. Text Book of Comparative Endocrinology, H.A. Bern5. Animal Physiology: Adaptation and Environmental, K.S. Nelson (ed) Cambridge University Press, Cambridge, UK6. Medical physiology, Guyton and Hall7. Histology, H.R. Michael

Semester- Two

ZOOL C 204

Ethology, Applied Ecology, and Microbiology


Credits



Course Objectives: Objectives of the paper is to provide basic idea about different aspects of animal behaviour, applied ecology and microbial world.

Student Learning Outcomes: Students after completion of this course are expected to learn social organisation and their impotence in animals, pollution and its causative agents, bacterial and viral diversity, their genetics and their implication.

Course Coordinator: Dr. T.K. Barik

Unit I Ethology Lectures:16	<ol style="list-style-type: none">1. Concept of animal behavior: Innate, Acquired; Social interaction in Insects and Primates2. Altruism and Kin selection3. Neural basis of learning and memory4. Hypothalamus and regulation of animal behaviour
Unit II Applied Ecology Lectures:16	<ol style="list-style-type: none">1. Pollution and abatement of land, air and water, noise pollution2. Global warming and its consequences3. Ozone layer depletion, Acid rain-causes & consequences4. Bioremediation
Unit III Microbiology-I Lectures:16	<ol style="list-style-type: none">1. Bacteria structure and morphology and classification2. Structure and function of bacterial cell wall3. Genetic recombination in bacteria4. Antibiotics classification and mode of action
Unit IV Microbiology-II Lectures:16	<ol style="list-style-type: none">1. Characteristics and classification of viruses2. Life cycle of Bacteriophages3. Pathophysiology of CoV, H₁N₁ and HIV4. Bioterrorism
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. Ecology, E.P. Odum, R. Holt, Winston Inc., USA,2. C.S. Binoda, M.P. Nayar, River Pollution In India. APH Publ. Corpn., New Delhi.3. Campbell Biology, Reece, Urry, Cain <i>et al</i>4. Essential of Ecology, Miller, Spoolman5. Animal Behaviour, J. Alcock6. Principles of Animal Communications, J.W. Bradbury7. Microbiology Principles and Explorations, J.G. Black, L.J. Black, 9th Edition, Willey Publishers8. Prescott's Microbiology, J. Willey, K. Sandman, D. Wood, 11th Edition

Semester- Two

ZOOL P 205

Laboratory Course Work-II

Credits



Course Coordinator:
Head, Department of
Zoology

Course Objectives: Objectives of the paper is to provide 1) hand on exposure in collection, preservation and identification of vertebrates using basic taxonomic key, 2) observation and preparation of different slides related to histology 3) experiment related to human physiology, 4) practical related to animal behaviour, 5) performing different ecological experiments and basic microbiological experiments.

Student Learning Outcomes: On completion of this course, students are expected to learn collection, preservation, identification of vertebrates, blood physiology, histological details of important organs, experience animal behavior, physicochemical analysis of water and soil, media preparation for microbial growth and basic staining methods.

Biology of Chordates, Molecular Biology, Physiology, Endocrinology and Histology, Ethology, Applied Ecology, Biogeography and Palaeontology	<ol style="list-style-type: none">1. Vertebrate Anatomy of preserved animals available in Market:-<ol style="list-style-type: none">a) Scoliodon (Afferent and Efferent blood vessels, cranial nerves, internal ear, ampula ofb) Lorenzini, placoid scale)c) Cycloid and ctenoid scales of bony fishes.d) <i>Calotes</i> (Blood vascular system, and hyoid apparatus)e) Pigeon (Blood vascular system, brain, air sacs, pecten, flight and perching muscles)f) Rat (Neck nerves, brain and vascular system)2. Identification and Comments upon<ol style="list-style-type: none">a) Museum specimensb) Bonesc) Permanent histological slides3. Ecological experiments to determine-<ol style="list-style-type: none">a) Acidity, alkalinity and chlorinity of water samplesb) Dissolved oxygen content of waterc) pH of soil and water samples4. Identification with comments upon animals with ecological adaptation and of evolutionary importance5. Collecting different local animals/ photographs (least concern category) and their classification using taxonomic keys6. Physiological experiments-<ol style="list-style-type: none">a) Haemin crystals, hemoglobin concentration, RBC and WBC countingb) Oxygen consumption in insects and rats7. Construction of Ethogram-available animal found in and around Bhanja Bihar University campus8. Habituation in Annelid, Arthropod and Mollusc9. Demonstration of Chemical communication in ants10. Preparation of culture media11. Gram staining12. Biochemical test (Catalase, oxidase, carbohydrate)
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Semester-Two

ZOOL VAC 206

Bioinformatics, Biosafety and Bioethics


Credits



Course Objectives: The objectives of this course is to provide theory and practical experience to analyze different biological data using common computational tools and databases which facilitate investigation of molecular biology and evolution-related concepts in Bioinformatics. The objectives of this course are to educate students about the fundamental concepts of bioprocess technology and its related applications, thus preparing them to meet the challenges of the new and emerging areas of biotechnology industry. To become familiar with India's IPR Policy; To learn biosafety and risk assessment of products derived from biotechnology and regulation of such products.

Student Learning Outcomes: Student should be able to develop an understanding of basic theory of these computational tools; to gain working knowledge of these computational tools and methods; appreciate their relevance for investigating specific contemporary biological questions and to critically analyse and interpret results of their study. Students should be able to appreciate relevance of microorganisms from industrial context; to carry out stoichiometric calculations and specify models of their growth; to give an account of design and operations of various fermenters; to calculate yield and production rates in a biological production process, and also interpret data etc.

Course Coordinator: Dr. L. K. Murmu

Unit I Bioinformatics-I Lectures:16	<ol style="list-style-type: none">1. Introduction to Bioinformatics2. DNA and protein databsae3. Searching for sequence database like FASTA and BLAST algorithm4. Sequence allignment
Unit II Bioinformatics-II Lectures:16	<ol style="list-style-type: none">1. Structural viewers of protein (PyMOL)2. Practical aspects of multiple sequence alignment (CLUSTALW/CLUSTAL X)3. Basic ideal about MEGA4. Construction of phylogenetic tree
Unit III Biosafety Lectures:16	<ol style="list-style-type: none">1. Introduction to Biological safety2. Biosafety guideline-Govt of India, Basic biosafety practices in the laboratory3. Biological hazards4. Basic idea on GMO and LMO
Unit IV Bioethics Lectures:16	<ol style="list-style-type: none">1. IPR and genetic resources2. Patent, Trade, Copyright and trade mark3. Indain patent Act, filing of patent application4. Biopiracy
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Ganguli, P. (2001). <i>Intellectual Property Rights: Unleashing the Knowledge Economy</i>. New Delhi: Tata McGraw-Hill Pub.2. Mount, D. W. (2001). <i>Bioinformatics: Sequence and Genome Analysis</i>. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press.3. Bourne, P. E., & Gu, J. (2009). <i>Structural Bioinformatics</i>. Hoboken, NJ: Wiley-Liss.4. Lesk, A. M. (2004). <i>Introduction to Protein Science: Architecture, Function, and Genomics</i>. Oxford: Oxford University Press.5. Lesk, A.M. (2002). <i>Introduction to Bioinformatics</i>. Oxford University Press6. Mount, D. W. (2001). <i>Bioinformatics: Sequence and Genome analysis</i>. Cold Spring Harbor, NY: Cold Spring Harbour Laboratory Press.7. Wayne W. Daniel, <i>Bioststistics: A foundation for analysis in the Health Sciences</i>.8. Rosner, B. (2000). <i>Fundamentals of Biostatistics</i>. Boston, MA: Duxbury Press.9. Daniel, W. W. (1987). <i>Biostatistics, a Foundation for Analysis in the Health Sciences</i>. New York: Wiley.

SEMESTER-III

Semester- Three

ZOOL C 301

Immunology and Histochemistry

Credits



Course Objectives: Objective of the paper is to provide comprehensive idea about human immunology with special emphasis on the types of immunity and immune cells, maturation and activation of B and T-cells, antibody diversity and interaction with antigens. The paper also deals with Histochemical techniques

Student Learning Outcomes: Students after completion of this course are expected to know in details about human immune system and mechanism of immunity. The histochemical technique shall help the students in development of their research skills.

Course Coordinator: Dr. S.K. Dash

Unit I Basic Immunology Lectures:16	<ol style="list-style-type: none">1. Innate immunity2. Adaptive immunity3. Multigene organization of immunoglobulin gene4. Immunoglobulin gene rearrangement
Unit II Components of Immune System Lectures:16	<ol style="list-style-type: none">1. Generation of antibody diversity2. Antibody Engineering3. Vaccines4. Hypersensitivity
Unit III Histochemistry-I Lectures:16	<ol style="list-style-type: none">1. Principles and chemistry of Fixation2. Metachromasia and Mordants3. Immunocytochemistry4. Quantitative histochemistry: Absorptiometry and Fluorimetry
Unit IV Histochemistry-II Lectures:16	<ol style="list-style-type: none">5. Carbohydrates by PAS method6. Protein by Mercury bromophenol blue7. Lipid by Sudan black B method8. DNA by Feulgen method and RNA by methyl green pyronin Y
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Kuby Immunology, J. Punt, S. Stanford, P. Jones, J.A. Owen, 8th Edition2. Understanding Immunology, P. Wood, 02nd Edition3. Basic Immunology, A.k. Abbas, A.H. Lichtman, 3rd Edition4. Clinical Immunology Principles and Practices, R.R. Rich, 04th Edition, Elsevier Publisher5. Essential Clinical Immunology, J.B. Jabrskie, Cambridge

Semester-Three

ZOOL E 302

Entomology

Credits



Course Objectives: To enable the students to get acquainted with origin and classification of insects. It also give insight to commercial entomology, public health entomology, house hold pest, Integrated Pest Management modules for various important crops. They will also learn about the various management strategy especially eco-friendly means of control.

Student Learning Outcomes: After the completion of the course the students will be acquainted with the different vectors, their characteristics and process of transmission and infection. The students will also learn about the management techniques of different vectors. Further, the students will also be acquainted with the different means of insect-pest management. They will also learn about the different application techniques of insecticides, and its management.

Course Coordinator: Dr. T.K. Barik

Unit I Origin and Classification of Insects Lectures:16	<ol style="list-style-type: none">1. Origin and Evolution of Insects2. Classification of insects upto order with examples.3. Growth development and metamorphosis of Insect4. Collection and preservation of insects
Unit II Economical Entomology Lectures:16	<ol style="list-style-type: none">1. Biology of honey bees and apiculture2. Lac insects and their management.3. Prospects and status of Silk producing species - their distribution and life cycle, structure of the silk gland.4. Predators, parasites and pathogens of Insects
Unit III Morphology and Bionomics of Insects Lectures:16	<ol style="list-style-type: none">1. Morphology, Bionomics and Management of important pests of Rice.2. Morphology, Bionomics and Management of important pests of Sugarcane.3. Morphology, Bionomics and Management of pests of sub-tropical and tropical fruits (Mango, Banana)4. Morphology, Bionomics and Management of household pests (Mosquitoes and Housefly)
Unit IV Social and Physiological Aspects of Insects Lectures:16	<ol style="list-style-type: none">1. Social behaviour in Insects2. Physiology and mechanism of Compound vision3. Insect Hormones with special reference to Pheromones4. Thermoregulation in Insects
	Recommended Textbooks and References: <ol style="list-style-type: none">1. The Insects: An Outline of Entomology, P.J. Gullan, P.S. Cranston2. General Text book of Entomology, O.W. Richard, R.G. Davies, Part I & II3. Insect Biology-A textbook of Entomology, H.E. Evans, Wesley Publ. Co..4. General Entomology. M.S. Mani, Oxford & IBH Publ. Co.5. Insects, M.S. Mani, National Book Trust, India6. A Textbook of Entomology, H.H. Ross, C.A. Ross, J.R.P. Ross, John Wiley & Sons

Semester- Three

ZOOL E 303

Bioinstrumentation and Biostatistics

Credits



Course Objectives: Objectives of the paper is to provide basic idea about working principles and application of different instruments and methods used in biological sciences. The course also designed to give statistical analysis of biological data.

Student Learning Outcomes: Students after completion of this course are expected to handle and operate basic instruments for their experimental purposes. The students also have clear understanding of data and its analysis that will help them in pursuing higher studies.

Course Coordinator: Dr. P. K. Dixit

Unit I Microscopy, Centrifugation, Chromatography Lectures:16	<ol style="list-style-type: none">1. Light and Electron microscopy2. Centrifugation3. Affinity chromatography (Paper and TLC)4. Adsorption chromatography (Ion exchange and Gel)
Unit II Spectroscopy and Radioisotope techniques Lectures:16	<ol style="list-style-type: none">1. UV/Vis Spectrophotometry2. Autoradiography3. Immunodiffusion4. Application of Radioisotopes in Biology
Unit III Biostatistics-I Lectures:16	<ol style="list-style-type: none">1. Introduction and scope of Biostatistics, Levels of Measurements: Variables, Nominal scale, ordinal scale, interval and ratio scale of measurements.2. Tabular and graphical representation of data3. Descriptive statistics: Point estimates (Mean, Mode, Median, Percentile); Interval Estimates (Range, IQR, MAD, Variance, Standard Deviation, SEM, CV and CD); Error bars- various methods to calculate error bar: Standard Deviation (SD), Standard Error of the Mean (SEM), 95% Confidence Intervals (CI), Median, Range and Quartiles.4. Moments, Skewness and Kurtosis
Unit IV Biostatistics-II Lectures:16	<ol style="list-style-type: none">1. Confidence Intervals, Statistical Hypothesis Testing, significance level, p value, Relationship between Confidence Intervals and Statistical Significance, difference between parametric and non parametric test2. Student's t test, F test and ANOVA test (one way and two way), Chi- square test3. Probability distributions- Normal, Binomial and Poisson4. Simple correlation and Regression
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Modern Spectroscopy, JM Hollas, Willey Publication2. Molecular Structure and Spectroscopy, G. Aruldash3. Experimental Biochemistry, Wilson and Walker4. Fundamental of light microscopy and electronic Imaging, Douglas Murphy5. Introductory biostatistics, C.T. Le, L.E. Eberly, John Wiley & Sons6. Biostatistics: A methodology for the health sciences, G. van Belle, L.D. Fisher, P.J. Heagerty, T. Lumley, Vol. 519, John Wiley & Sons7. Intuitive biostatistics: A nonmathematical guide to statistical thinking, H. Motulsky, Oxford University Press, USA

Semester-Three

ZOOL P 305

Laboratory course work-III

Credits



Course Coordinator:
Head, Department of Zoology

Course Objectives: Objectives of the paper is to provide a hand on exposure of different instruments used in biological sciences, basic practical on methods in biology, application of statistics in presentation of biological data and solving biological problems, basic embryological and immunological experiments.

Student Learning Outcomes: Students are expected to learn instrumentation and their operation, stastical analysis of data, identification of various stages of chick embryo and blood grouping

Instrumentation, Biostatistics, Immunology, Histochemistry and Entomology	<ol style="list-style-type: none">1. Permanent histochemical preparation for the localization of –<ol style="list-style-type: none">a) Protein by mercuric bromophenol blue methodb) Carbohydrate by PAS & toluidine blue methodc) Lipid by Sudan Black B method2. Identification with comments on histochemical slides3. Demonstrations of Electrophoresis4. Demonstrations of PCR5. Demonstration of Chromatography6. Demonstration of Centrifugation7. Demonstration of Spectrophotometer and Quantification of protein using Biuret method, lowry method8. Quantitive measurement of Biomolecules using Spectroscopy9. Tabular and Graphical presentation of Data using Excel and minitab10. Hypothesis testing-student t-test, F-test, NOVA test, Chi-Sqaure test,11. Practical related to simple correlation and regression analysis12. Demonstration of Blood group and Rh Antigen13. Permanent Slide of thymus and spleen14. External features of available field collected insects15. Methods of collection and preservation of insects16. Wing venation, types of wings and winf coupling apparatus17. Types of insect antenna, mouth parts and legs18. Insecticidal efficacy test
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Semester-Three

ZOOL CT 300

Conservation

Biology*


Credits



Course Objectives: Objectives of the paper is to provide basic idea on Biodiversity, measuring biodiversity, international and national efforts, molecular phylogeny and different conservation measures to conserve biodiversity.

Student Learning Outcomes: Students after completion of this course are expected to get a holistic understanding on biodiversity and its importance, phylogeny, inculcate the value of bio-resources and develop compassion toward bio-resources.

Course Coordinator: Dr. J. K. Seth

Unit I Basic Concepts Lectures:16	Biodiversity (genetic diversity, species diversity, ecosystem diversity) and its use, Causes of biodiversity losses, IUCN red list of threatened species, Invasive species, Alien species, Indicator species, Keystone species, Umbrella species, Flagship species, Charismatic species
Unit II Measuring Biodiversity Lectures:16	Alpha, Beta and Gamma diversity , Species Richness(S), Evenness(E) , Simpson index(D), Shannon-Weiner Index (H'), idea on biodiversity calculator software
Unit III International and National efforts for conserving biodiversity Lectures:16	National Act and International Act related to Biodiversity Conservation: Biological diversity Act 2002, National Biodiversity Authority, People Biodiversity Registrar, Convention on Biological diversity, Cartagena Protocol and Nagoya Protocol, Sustainable Development Goal and Biodiversity, Aichi Biodiversity Targets, CITES, WWF
Unit IV Conservation Measures and Molecular Phylogeny Lectures:16	In-situ conservation (Indian context) (Sanctuaries, National and Biosphere reserves) and Ex-situ conservation (Indian context) (Botanical gardens, zoos, cryopreservation, gene bank) NCBI data base, basic idea on phylogenetic tree, Construction and interpretation of molecular phylogeny tree based on COI and 16s rRNA gene sequences using MEGA and other tools
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Fundamental of Ecology : O.P Odum2. Campbell Biology: Reece, Urry,Cain et al.3. Evolutionary analysis : Herron and freeman4. Convention of Biological diversity- https://www.cbd.int/5. Aichi Biodiversity Targets- https://www.cbd.int/sp/targets/6. IUCN-https://www.iucn.org/7. CITES-https://cites.org/eng8. https://sustainabledevelopment.un.org/topics/biodiversityandecosystems9. https://bch.cbd.int/protocol/10. https://www.cbd.int/abs/11. https://wwf.panda.org/12. http://moef.gov.in/13. http://nbaindia.org/

Semester-Three

ZOOL VAC 306

Human Nutrition


Credits



Course Objectives: Objective of the paper is to provide brief idea about the human nutrition and nutrients.

Student Learning Outcomes: Students, after completion of this course, are expected to know about different essential nutrients, their role in human health and abnormalities associated with their deficiencies.

Course Coordinator: Dr. S. K. Dash

Unit I	Fundamentals of human nutrition and essential nutrients for human
Unit II	Basal metabolism and nutritional requirement variation with physiological changes and age, Supplementary and balanced diet
Unit III	Introduction to carbohydrate, protein, and fat. Different sources of these nutrients
Unit IV	Malnutrition and related disorders
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. SA Lanham-New, TR Hill, AM Gallagher, HH Vorster, Introduction to human nutrition, 3rd Ed, Willey Blackwell2. MJ Gibney, HH Vorster, FJ Kok, Introduction to human nutrition, Willey Blacwell Publishing3. SR Mudambi, MV Rajagopal, Fundamental Food Nutrition and Diet Therapy, New Age International Publishers4. AA Agrawal, SA Udipi, Textbook of human nutrition, Jeypee Publishers.5. T Rekhi, H Yadav, Fundamentals of food and nutrition, Elite publishing House.6. C. Gopalan, BVR Sastri, SC Balasubhramanian, Nutritive values of Indian Food, ICMR, NIN

SEMESTER-IV

Semester-Four

ZOOL C 401

Cytogenetics, Stress Physiology and Metabolic disorders


Credits



Course Objectives: The objective of course is to provide advanced knowledge on cytogenetics, stress physiology and metabolic disorders.

Student Learning Outcomes: Students are expected to learn differences aspects of genomic analysis, meiotic abnormalities, different sex linked diseases and in situ techniques. Also, the course will help students in understanding the physiology of stress and various metabolic disorders.

Course Coordinator: Dr. J.K. Seth

Unit I Cytogenetics-I Lectures:16	<ol style="list-style-type: none">1. Genomic analysis and C-value paradox2. Human cytogenetics- Human karyotype, banding and nomenclature, Numerical and structural abnormalities of chromosomes3. Meiotic abnormalities- Non-disjunction of chromosomes, mis-division of centromere4. Repetitive and Non-repetitive DNA sequence
Unit II Cytogenetics-II Lectures:16	<ol style="list-style-type: none">1. Amniocentesis, Monogenic disorders: Autosomal dominant (Huntington's diseases), Autosomal recessive (Cystic fibrosis),2. Sex linked (Color blindness and Hemophilia).3. In situ- hybridization and its applications: FISH and GISH4. Transposons and associated disorders
Unit III Metabolic Disorders Lectures:16	<ol style="list-style-type: none">1. Biochemistry of inherited and metabolic disorders: Phenylketoneuria, Alkaptonuria, Albinism2. Neurochemical associated diseases: Alzheimer's disease, Parkinson's disease3. Human nutrition and associated hazards4. Molecular mechanism of senescence
Unit IV Stress Physiology Lectures:16	<ol style="list-style-type: none">1. Concept of Biological stress and strain2. Stress adaptation- Resistance, stress tolerance, Acclimation and acclimatization3. Stress associated disorders4. Oxidative stress
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. Molecular Cell Biology, Lodish, Berk, Kaiser, Krieger, Bretscher, Ploegh, Amon, Martin2. Cell Biology, G. Karp3. Cell and Molecular Biology, De Robertis4. Lehinger Principles of Biochemistry, D.L. Nelson, M.M. Cox, 07th Edition5. Biochemistry, J.M. Berg, L. Stryer, J.L. Tymoczko, G.J. Gatto, 08th Edition6. Harper's Illustrated Biochemistry, V.L. Rodwell, D.A. Bender, K.M. Botham, P.J. Kennely, P.A. Weil, 31st Edition7. Principles of Cancer Biology, L.J. Kleinsmith8. Cancer Biology, R.J.B. King, M.W. Robins, 03rd Edition9. The Insects: An Outline of Entomology, P.J. Gullan, P.S. Cranston10. General Text book of Entomology, O.W. Richard, R.G. Davies, Part I & II11. Insect Biology-A textbook of Entomology, H.E. Evans, Wesley Publ. Co..12. General Entomology. M.S. Mani, Oxford & IBH Publ. Co.13. Insects, M.S. Mani, National Book Trust, India14. A Textbook of Entomology, H.H. Ross, C.A. Ross, J.R.P. Ross, John Wiley & Sons

Semester-Four

ZOOL E 402

Epigenetics and Cancer Biology

Credits



Course Objectives: The objective of the course is to provide a comprehensive idea about epigenetic and its mechanism, and cancer cells biology

Student Learning Outcomes: The students are expected to learn epigenetic related disorders and their consequences, differences aspects of cell transformation from normal to cancer cells, different proteins and genes involved in different types of cancers, and treatment

Course Coordinator: Mr. L.K. Murmu

Unit I Epigenetics-I Lectures:16	<ol style="list-style-type: none">1. Epigenetics- chromatin modifications and their mechanism of action,2. Epigenetics and genome imprinting - DNA methylation in mammals, genomic imprinting in mammals3. Epigenetics in <i>Saccharomyces cerevisiae</i>4. Gene silencing
Unit II Epigenetics-II Lectures:16	<ol style="list-style-type: none">1. Epigenetic regulation of chromosome inheritance2. Epigenetic regulation of the X chromosomes in <i>C.elegans</i>3. Dosage compensation in <i>Drosophila</i>4. Dosage compensation in mammals; mechanism of chromatin remodeling.
Unit III Cancer Biology-I Lectures:16	<ol style="list-style-type: none">1. Difference between normal cells and cancerous cell, Proto-oncogene, tumor suppressor genes and care taker genes2. Loss of function and gain of function mutation,3. Cancer stem cells and its possible origin.4. Brief idea on different genes/proteins related to cancer: p53, APC, src, ras, Rb, BRCA1 and BRCA2, P²¹ and P16.
Unit III Cancer Biology-II Lectures:16	<ol style="list-style-type: none">1. Limitless replicating potential: Metastasis, and Angiogenesis2. Apoptosis and Evasion of Apoptosis3. Self sufficiency in growth signal, and Insensitive to antigrowth signals4. Possible treatment of cancer: Radiation and chemotherapy
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. Lewin's Genes X, J.E. Krebs, E.S. Golstein, S.T. Kilpatrick, Volume 10, Jones and Bartlett Publishers2. Lehinger Principles of Biochemistry, D.L. Nelson, M.M. Cox, 07th Edition3. Biochemistry, J.M. Berg, L. Stryer, J.L. Tymoczko, G.J. Gatto, 08th Edition4. Harper's Illustrated Biochemistry, V.L. Rodwell, D.A. Bender, K.M. Botham, P.J. Kennely, P.A. Weil, 31st Edition5. Principles of Cancer Biology, L.J. Kleinsmith6. Cancer Biology, R.J.B. King, M.W. Robins, 03rd Edition

Semester-Four

ZOOL E 403

Applied Biology

Credits



Course Coordinator:
Dr. T.K. Barik

Course Objectives: This course deals with human gene mapping, cell culture, transgenic, nano-technology, nano-particles and their application in drug delivery. The course also covers ecotechnology and Molecular techniques.

Student Learning Outcomes: Students after reading this course are expected to have knowledge orient towards industrial microbiology for self entrepreneurship development and application of nano-science in biological research. Further, it will enhance the students ability in various ecotechnological enterpneuership skills and advance molecular tools techniques.

Unit I Applied Genetics Lectures:16	<ol style="list-style-type: none">1. Human gene mapping- Physical mapping & map-based cloning, molecular markers in genome analysis (RFLP, AFLP, RAPD)2. Ribozyme technology and its application3. Cell and tissue culture methods for animals4. Transgenic animals, molecular approaches to diagnosis and strain identification.
Unit II Applied Microbiology Lectures:16	<ol style="list-style-type: none">1. Microbial fermentation and production of small and macro molecules,2. Elementary Ideas of antibiotics (Classification and resistance)3. Genomics and its application to health and agriculture, including gene therapy.4. Biosensors, Bioterrorism (causative agents and consequences).
Unit III Nanotechnology Lectures:16	<ol style="list-style-type: none">1. Nanotechnology- Break through an introduction2. Application of Nanotechnology,3. Bucky balls, Bucky tubes and their applications,5. Nanotechnology in drug delivery
Unit IV Ecotechnology Lectures:16	<ol style="list-style-type: none">1. Solid waste management2. Biofertilizers3. Vermicomposting4. Biopesticide
Unit IV Molecular Techniques Lectures:16	<ol style="list-style-type: none">1. Isolation of Genomic and plasmid DNA2. Polymerase Chain Reaction and its applications3. DNA, Protein sequencing methods4. Blotting techniques
	<p>Recommended Textbooks and References:</p> <ol style="list-style-type: none">1. Lewin's Genes X, J.E. Krebs, E.S. Golstein, S.T. Kilpatrick, Volume 10, Jones and bartlet Publishers2. Lehinger Principles of Biochemistry, D.L. Nelson, M.M. Cox, 07th Edition3. Biochemistry, J.M. Berg, L. Stryer, J.L. Tymoczko, G.J. Gatto, 08th Edition4. Harper's Illustrated Biochemistry, V.L. Rodwell, D.A. Bender, K.M. Botham, P.J. Kennely, P.A. Weil, 31st Edition5. Microbiology Principles and Explorations, J.G. Black, L.J. Black, 9th Edition, Willey Publishers6. Prescott's Microbiology, J. Willey, K. Sandman, D. Wood, 11th Edition7. Basic Principles of Nanotechnology, W.C. Sanders, CRC Press8. Introduction to Nanotechnology, C.P. Pools, F.J. Owens, Willey Publishers9. A handbook of Nanotechnology, U. Kumar10. Nanophysics and Nanotechnology, E.L. Wolf, Willey Publications

Semester-Four

ZOOL E 404

Developmental Biology and Radiation Biology

Credits



Course Objectives: The main objective of Developmental Biology course is make student understand the patterns and process of embryonic development, body plan, fate map, induction, competence, regulative and mosaic development, molecular and genetic approach for the study of developing embryo which is not necessarily shared with any other disciplines in the biological sciences. This paper also deal with Radiation Biology with special emphasis on different radiation sources, its health impact, use of radiation in controlling pest and its role in inherited diseases.

Student Learning Outcomes: Students are expected to learn the basic principle and process of developmental biology and Radiation Biology and able to make themselves aware to deleterious effects radiation too

Course Coordinator: Dr. P. K. Dixit

Unit I Developmental Biology-I Lectures:16	<ol style="list-style-type: none">1. Gonads structures (Testis and Ovary)2. Synthesis and action of male hormones3. Synthesis and action of female hormones4. Female reproductive/gonadial cycle
Unit I Developmental Biology-II Lectures:16	<ol style="list-style-type: none">1. Structure of gametes (Male and Female)2. Gametogenesis and it's regulation3. Molecular mechanism of fertilization4. Cleavage and its pattern
Unit II Developmental Biology- III Lectures:16	<ol style="list-style-type: none">1. Basic experiments of developmental biology2. Axes and pattern formation in <i>Drosophila</i>3. Vulva formation in <i>Caenorhabditis elegans</i>4. Limb development and regeneration in vertebrates
Unit III Radiation Biology Lectures:16	<ol style="list-style-type: none">1. Definition, scope and significance of radiation biology, classification of radiation, Ionizing radiation, types of electromagnetic radiation, radiation dose and units2. Electromagnetic radiation and its interaction with living matter with special reference to UV and Visible light3. Radiation in insect pest management: Types of radiation used, radiation induced dominant lethal mutation, sterile insect technique, F₁ sterility technique4. Radiation induced heritable diseases
	Recommended Textbooks and References: <ol style="list-style-type: none">1. Developmental Biology, S.F. Gilbert2. Introduction to Embryology, B.L. Balinsky3. The Logic of Scientific discovery, K. Popper4. Understanding Radiation Biology from DNA Damage to Cancer and Radiation Risk, K.H. Chadwick5. Essentials of Radiation Biology and Protection, S. Foshier

Semester-Four

ZOOL D 405

Project, Dissertation and Viava-Voce

Credits



Course Objectives: The objectives of this course are to develop research aptitude, scientific temper and critical analysis among students.

Student Learning Outcomes: Students are expected to gain the basic skill in project handling and writing of their project report.

Course Coordinator: Head, Department of Zoology

Plan and Execution	Students will be grouped and assigned to Concern faculties to plan and carryout projects on a topic of interest in order address critical issue or persue new and novel inventions. The students will carry out projects with self-involvement through thorough understanding and learning of different research tools and techniques. During their research tenure the students will also be taught about skills of writing thesis, articles, and projects for their future benefit.
Dissertation Thesis	At the end of their project, thesis has to be written giving full details about their project. Students will be insisted to publish their research findings in Journals of National and Interantional repute or file patent.

Semester-Four

ZOOL AC 406

Cultural Heritage of South Odisha

Credits




Course Objectives: Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as 'BHANJA BIHAR'. South Odisha is the adorable storehouse of literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha.

Student Learning Outcomes: The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale.

Course Coordinator:

Prof. P. K. Swain (Post Graduate Department of Odia)

Unit I	Literary works of Kabi Samrat Upendra Bhanja
Unit II	Other Litterateurs of South Odisha
Unit III	Cultural Heritage of South Odisha
Unit IV	Folk and Tribal Traditions of South Odisha
	Recommended Textbooks and References: 1.

Proposed Microbiology Syllabus



Berhampur University
Session: 2022-2024
(As per CBCS)

MSc. Microbiology

Paper code	Title	Credits	Internal marks	End sem Marks	Total Marks
SEMESTER-I					
MB-CC-101	General / Introductory Microbiology	4	20	80	100
MB-CC-102	Reproduction & Life Cycle of Microbes	4	20	80	100
MB-CC-103	Nutrition & Physiology of Microbes	4	20	80	100
MB-CC-104	Microbiological Techniques & Instrumentation	4	20	80	100
MB-CC-105	Seminar & Laboratory	6	0	100	100
SEMESTER-I TOTAL		22	80	420	500
SEMESTER-II					
MB-CC-201	Microbial Genetics & Molecular Biology	4	20	80	100
MB-CC-202	Biochemistry & Enzymology	4	20	80	100
MB-CC-203	Fundamentals of Immunology & Diagnostic Microbiology	4	20	80	100
MB-CC-204	Viruses & Bacteriophages	4	20	80	100
MB-CC-205	Seminar & Laboratory	6	0	100	100
VAC	Summer Internship/Industrial Visit/ Swayam or NPTEL Courses	NC	NC	NC	NC
SEMESTER-II TOTAL		22	80	420	500
SEMESTER-III					
MB-CC-301	Medical Microbiology	4	20	80	100
MB-CE-302	Industrial Microbiology	4	20	80	100
MB-CE-303	Microbial Biotechnology	4	20	80	100
MB-CT-304	Microbial Bioinformatics & Biostatistics	4	20	80	100
MB-CC-305	Seminar & Laboratory	6	0	100	100
VAC	Research Methodology & Scientific Communication Skills	NC	NC	NC	NC
SEMESTER III-TOTAL		22	80	420	500
Paper code	Title	Credits	Internal marks	End sem Marks	Total Marks
SEMESTER-IV					
MB-CC-401	Environmental Microbiology	4	20	80	100
MB-CE-402	Soil & Agricultural Microbiology	4	20	80	100
MB-CE-403	Food Microbiology	4	20	80	100
MB-CE-404	IPR, Biosafety & Bioethics	4	20	80	100
MB-D-405	Dissertation (Thesis + Presentation)	6	0	100	100
	Cultural Heritage of South Odisha	NC	NC	NC	NC
SEMESTER IV-TOTAL		22	80	420	500
GRAND TOTAL		88	--	--	2000

Elective Papers

Recommended Elective papers for Semester-III

(1). Industrial Microbiology (2). Microbial Biotechnology (3). Microbial Bioinformatics & Biostatistics (4). Advanced Microscopy (5). Plant & Animal Viruses (6). Extremophiles & Evolution (7). Fungal & Algal Biotechnology (8). Therapeutics: Vaccine Technology (9). Pharmaceutical Microbiology

Recommended Elective papers for Semester-IV

(1). Soil & Agricultural Microbiology (2). Food Microbiology (3). IPR, Biosafety & Bioethics (4). Omics Concept in Biology (5). Molecular Diagnostics: Sensors, Biosensors and Other diagnostic Techniques (6). Cancer biology & Clinical Immunology (7). Manipulation/ Recombinant Technology (8). Environmental Pollution Monitoring and Waste Water Treatment (9). Nanobiotechnology

Semester One

MB-CC-101

GENERAL AND INTRODUCTORY MICROBIOLOGY

Credits- 4

Unit I Introduction, History and Scope	Introduction, History and Scope of Microbiology, Diversity of Microorganisms; controversy over spontaneous generation, Golden age of Microbiology, Development of Microscopy; Biogenesis vs. Abiogenesis; Contribution of Microbiologists namely: (A. V. Leeuwenhoek, Louis Pasteur, Robert Koch, Edward Jenner, Alexander Fleming, Winogradsky, Beijernick and Joseph Lister), Scope & Importance of Microorganisms
Unit II Structure & Function of Cell	Structure and function of prokaryotic and eukaryotic cell (bacteria, cyanobacteria & fungi). Locomotory Organs & Motility
Unit III Classification & Taxonomy of Microorganisms	Classification of Microorganisms: Objectives and difficulties encountered in classification; Genetic methods of classification based on relatedness, intuitive, numerical, systematized natural i.e., 3 – and 5 – kingdom classification; based on cataloguing r – RNA and computer aided classification, Bergey’s Manual of Systematic Bacteriology; Taxonomy of Microbial diversities: Taxonomic groups (Algae, Fungi, Protists, Virus and Bacteria including Archaea, Actinomycetes, Mycoplasma, Chlamydia, Rickettsia, Gracilicutes, Firmicutes, Tanericutes & Mendosicutes.
Unit IV Characterization & Identification of Microbial diversities	Characterization & Identification of Microbes: Morphological, Chemical, Cultural, Media Specific, Biochemical (IMVIC) & Staining, Metabolic, Antigenic, Genetic, Ecological and Pathogenic.

Recommended Textbooks and References:

1. Pelczar, M.J., Reid, R.D., & Chan, E.C. (2001). *Microbiology* (5th ed.). New York: McGraw-Hill.
2. Willey, J.M., Sherwood, L., Woolverton, C.J., Prescott, L.M., & Willey, J.M. (2011). *Prescott’s Microbiology*. New York: McGraw-Hill.
3. Matthai, W., Berg, C.Y., & Black, J.G. (2005). *Microbiology, Principles and Explorations*. Boston, MA: John Wiley & Sons.
4. Brock Biology of Microorganisms – Madigan & Martinko

MB-CC-102

**REPRODUCTION
AND LIFECYCLE OF
MICROBES**

Credits-4

Unit I Life Cycle of Bacteria	Life cycle of Bacteria, Reproduction of Bacteria, Cell Cycle and Cell Division, Bacterial Endospore formation
Unit II Reproduction types in Fungi	Reproduction types in Fungi- sexual, Asexual, vegetative reproduction of molds and Yeasts. Life cycle of fungal microbes with reference to <i>Saccharomyces</i> , <i>Aspergillus</i> , <i>Penicillium</i> , <i>Puccinia</i> & <i>Phytophthora</i> . Fruiting bodies in Fungi, Degeneration of sexuality in fungi, Heterothalism in Fungi
Unit III Reproduction in Algae	Reproduction (Sexual, Asexual, Parasexual) and Life cycle of Algae including Brown algae, Red Algae, Blue Green Algae, Thallus organization in Algae.
Unit IV Life Cycle in Protozoa and Helminthes	Life Cycle in Protozoa and Helminthes species like: <i>Amoeba</i> , <i>Entamoeba</i> , <i>Plasmodium</i> , <i>Toxoplasma</i> , <i>Balantidium</i> , <i>Fasciola</i>

Recommended Textbooks and References:

1. Pelczar, M.J., Reid, R.D., & Chan, E.C. (2001). *Microbiology* (5th ed.). New York: McGraw-Hill.
2. Willey, J.M., Sherwood, L., Woolverton, C.J., Prescott, L.M., & Willey, J.M. (2011). *Prescott's Microbiology*. New York: McGraw-Hill.
3. Matthai, W., Berg, C. Y., & Black, J. G. (2005). *Microbiology, Principles and Explorations*. Boston, MA: John Wiley & Sons.
4. Brock Biology of Microorganisms – Madigan & Martinko

MB-CC-103
NUTRITION &
PHYSIOLOGY OF
MICROBES
Credits-4

<p>Unit I Nutrition and Cultivation of microorganisms</p>	<p>Nutrition and Cultivation of microorganisms: Common nutrient requirements, Nutritional types of microorganisms, Growth factors, Nutritional uptake</p>
<p>Unit II Measurement of Microbial Growth</p>	<p>Growth Curve, Mathematics of growth curve; Measurement of microbial growth; Growth Yield, Generation time; Continuous and Synchronous culture of microorganisms</p> <p>Pigmentation in Microbes: Chlorophyll, Bacterial chlorophyll, Rhodospin, Carotenoid and Phycobillin</p>
<p>Unit III Factors influencing Microbial Growth</p>	<p>Influence of environmental factors on growth (Solute and water activities, temperature, oxygen concentration and radiation). Microbial growth in natural environment. Mechanism of tolerance to extreme conditions. Quorum sensing in Gram negative bacteria. Extremophiles (Sulfolobus, Methanogens, Psychrophiles, Thermophiles) and their importance</p>
<p>Unit IV Metabolism</p>	<p>Metabolism: Anabolism – Oxygenic and anoxygenic photosynthesis, autotrophic generation of ATP, Fixation of CO₂, Chemolithotrophy. Catabolism – aerobic and anaerobic respiration, glyoxylate pathway, phosphorylation. Fermentation – homo and hetero-lactic fermentation. Lipid metabolism in Bacteria: Metabolism of triglycerides. Nitrogen metabolism – N₂ assimilation (N₂, NO₃, NH₄).</p> <p>Basic concept of bioenergetics: entropy, enthalpy, high energy compounds, artificial electron donor, electron carrier inhibitors, ATP cycle and its role in metabolism.</p>

Recommended Textbooks and References:

1. Pelczar, M.J., Reid, R.D., & Chan, E.C. (2001). *Microbiology* (5th ed.). New York: McGraw-Hill.
2. Willey, J.M., Sherwood, L., Woolverton, C.J., Prescott, L.M., & Willey, J.M. (2011). *Prescott's Microbiology*. New York: McGraw-Hill.
3. Matthai, W., Berg, C.Y., & Black, J.G. (2005). *Microbiology, Principles and Explorations*. Boston, MA: John Wiley & Sons.

MB-CC-104
MICROBIAL
TECHNIQUES &
INSTRUMENTATION
Credits-4

<p>Unit I Control of Microorganisms</p>	<p>Control of Microorganisms: Sterilization (Autoclave, Hot Air Oven), Disinfectants (Physical and Chemical&), Pure Culture Isolation Methods, Microbial Growth Measurements: MPN techniques, Micrometry: Micrometers, Principles and Measurements of Cell Dimensions. Microtome and histological techniques, Enumeration/Counting of Microorganisms</p>
<p>Unit II Microscopy</p>	<p>Microscopy: Principle and concept, Types of Microscopes: Light (Bright field and Dark field microscope, Phase contrast microscope, Inverted Microscope, Fluorescence Microscope, DIC & Confocal); Electron Microscope (TEM and SEM)</p>
<p>Unit III Centrifugation, Spectrophotometry PCR & Hybridization</p>	<p>Centrifugation: Basic principles, Types of Centrifuges; pH meter, Colorimeter, Spectrophotometer (UV and Visible); Fluorescence, Infrared, NMR, X-ray Crystallography PCR, Nucleic Acid Hybridization, Electrophoresis (Agarose and SDS-PAGE), Blotting (Southern, Northern, Western) Techniques</p>
<p>Unit IV Chromatographic Techniques</p>	<p>Chromatographic Techniques: Thin layer Chromatography, Paper Chromatography, Chromatographic technique for macromolecule separation (Size Exclusion, Gel Permeation, Partition, Hydrophobic, Reverse Phase, Affinity Chromatography), Column Chromatography, Ion Exchange Chromatography, Gas chromatography, HPLC.</p>

Recommended Textbooks and References:

1. Principles and Techniques of practical Biochemistry– Keith Wilson and John Walker
2. Freifelder D., Physical Biochemistry, Application to Biochemistry and Molecular Biology
3. Dr. Gurdeep R. Chatwal and Sham K. Anand, Instrumental Methods of Chemical Analysis

MB-CC-105

LABORATORY:

Credits- 6

Syllabus	<ol style="list-style-type: none">1. Safety rules in Microbiology laboratories and good laboratory practices.2. Microscopy: Principle, Procedure, Precautions detail of light microscopes.3. Micrometry: Principle and application in measuring cell dimension.4. Sterilization: Principle, Procedure and Validation.5. Preparation of media for growth of microorganisms.6. Isolation of microorganisms by plating, streaking and serial dilution methods.7. Maintenance of microorganisms by slant and stab culture.8. Isolation of pure culture from air, water and soil.9. Microscopic examination of Yeast, Bacteria, Moulds using standard staining techniques.10. Preparation of selective / enriched media for growth of specific microorganism.11. Biochemical characterization of selected microbes – IMViC test, Sugar fermentation, Oxidase, Catalase etc.12. Measurement of growth and mathematical expression.13. Effect of oxygen, pH, Temperature, salt, sugar, N₂ and Vitamins on microbial growth.14. Determination of ability of microorganisms to oxidize glucose.15. Instrumentation: Autoclave, Hot air oven, Laminar air hood, Incubator (BOD), Spectrophotometer, pH meter and centrifuge.16. Study of microbial biodiversities in slides / paper slides on: algae, fungi, protozoa, bacteria and virus.17. Experiment to demonstrate the motility of microbes.18. Chromatography technique: Paper, TLC.19. Validation of Beer- Lambert's law by UV-Visible spectroscopy
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Recommended Textbooks and References:

1. Cappuccino, J. G., & Welsh, C. (2016). Microbiology: a Laboratory Manual. Benjamin-Cummings Publishing Company.
2. Collins, C. H., Lyne, P. M., Grange, J. M., & Falkinham III, J. (2004). Collins and Lyne's Microbiological Methods (8th ed.). Arnolds.
3. Tille, P. M., & Forbes, B. A. Bailey & Scott's Diagnostic Microbiology
4. Prescott's Laboratory Exercises in Microbiology- 5th edition
5. Benson's Microbiological applications (Lab Manual, 14t Edn)

Semester Two

MB-CC-201
MOLECULAR
BIOLOGY &
GENETICS
Credits-4

Unit I Genome Organization Central Dogma Nuclear & Organellar Genomes, Genome Mapping	DNA –The Genetic material; Nucleic Acids: structure and function Prokaryotic, eukaryotic and viral genome. Replication of eukaryotic, prokaryotic and viral DNA. Transcription and Translation Plasmid and its virulence, Structure, classification and replication of plasmids, Transposable elements Nuclear and organellar genomes, genome diversity, genome complexity, Genetic Code, Gene Structure, DNA repair system, Genome mapping, Genome mapping including that in viruses. Denaturation and Renaturation kinetics (Cot Curve)
Unit II r-DNA Technology	Basics of r-DNA technology, Restriction endonuclease, Linkers and Adapters, Vectors (nature, uses and types: Bacteriophages, Cosmid, Plasmid, BAC and YAC). Isolation and purification of genomic and plasmid DNA, c-DNA synthesis, cloning in <i>E. Coli</i> . Selection and screening of recombinant clones: Insertional inactivation. Markers and reporter genes, blot techniques (Southern, Northern, Western dot and colony hybridization)
Unit III Mutation	Mutations: Spontaneous and induced (physical and chemical mutagens). Molecular basis of mutation. Point mutations, base substitution, transitions and transversions (frameshift mutations, deletion, addition), effects on the gene product, DNA repair mechanism. Recombinational repair- rec A, rec FOR, rec BCD, SOS. Gene mapping by recombination and complementation.
Unit IV Genetic Exchange & Gene Regulation	Genetic exchange: Mechanism of genetic exchange. Transformation; Conjugation and Transduction. Genetic exchange in nature and Lab. (horizontal transfer of genetic information). Barriers to genetic exchange (host restriction and modification. Transposable elements (Insertion sequences, transposons and integrons). Retrotransposons. Genetic regulation: Regulation of gene expression: Induction, activation and repression, attenuation and antisense control. Operons: Lac, trp. Genetic basis of cancer and cell death.

Recommended Textbooks and References:

1. Molecular Biology – Freifelder, D.
2. Molecular Genetics – Freifelder. D.
3. Molecular Biology of Gene – Watson J. D.
4. Biochemistry of Nucleic acid – Davidson. J. N.
5. Molecular Biotechnology – Primrose
6. Genetics – Strickberger
7. Fundamentals of Genetics – A.G. Gardener

MB-CC-202
BIOCHEMISTRY &
ENZYMOLGY
Credits-4

Unit I Biochemistry: Introduction	Physicochemical properties of water, pH, pKa, Acid, Base, Buffers; Handerson-Hasselbach equation, Inter and intra molecular forces: Vanderwaal and hydrophobic interactions, hydrogen bonding, Covalent and Non-covalent chemical bond and disulphide bridges Classes of organic compounds and functional groups
Unit II Carbohydrates Aminoacids Proteins	Carbohydrates: structure, function and classification: physical and chemical properties, reactivity of functional groups Amino acids: Structure, function, classification, types and properties. Proteins: structure, classification, protein folding, glycoprotein, mureins, Ramachandran Plot
Unit III Lipids	Lipid: Structure and biosynthesis of phospholipids and cholesterol, peptidoglycan synthesis, pattern of cell wall formation
Unit IV Enzymology	Enzymology: Classification and Nomenclature of Enzymes. Enzyme Kinetics: Michelis-Menton Equation, Lineweaver Burk Equation. Mechanism of enzyme action, Mode of enzyme reaction catalyzed by lysosome, RNase, chymotrypsin, Factors affecting enzyme kinetics and control of enzyme activities, Significance of V_{max} and K_m . Enzyme Inhibition and its types

Recommended Textbooks and References:

1. Fundamentals of Biochemisty – Lehninger
2. Biochemistry – J. L. Jain
3. Fundamentals of Biochemistry – Voet&Voet
4. Biochemistry- L. Stryer
5. Fundamentals of Enzymology: Cell and Molecular Biology of Catalytic Proteins, 3rdEdn - Price Nicholas C. and Lewis Stevens

MB-CC-203

**FUNDAMENTALS
OF IMMUNOLOGY
AND DIAGNOSTIC
MICROBIOLOGY**

Credits-4

Unit I Development & Scope of Immunology	Development and scope of Immunology; Immunoglobulin, Types of immunity (humoral and cellular); Complement system, Phagocytosis, Haematopoiesis.
Unit II Organs & Cells of Immune System	Organs and cells of the immune system: Primary and secondary lymphoid organs; B& T-lymphocytes; Dendritic &NK cells; Macrophages; Granulocytes; Dendritic cells; Mast cells; Antigen-Antibodies and their interactions (<i>In Vivo & In Vitro</i>); Polyclonal and Monoclonal antibodies (Hybridoma Technology). Advanced immunological techniques: RIA, ELISA, ELISPOT assay, Immunoelectrophoresis.
Unit III Hypersensitivity & Types	Hypersensitivity & Types: I, II, III & IV. Allergies: Atrophy, allergens, mast cells degradation, detection and treatment of Type -1 Hypersensitivity. Autoimmunity: types & causes and treatment of auto immune diseases. Immunodeficiencies – primary and secondary.
Unit IV Diagnostic Microbiology	Methods of collection, handling and transport of samples; General methods of laboratory diagnosis by isolation and identification of microbial pathogens. Staining Techniques simple, differential, Giemsa staining

Recommended Textbooks and References:

1. Cellular & Molecular Immunology – Saunders
2. Immunology – Kuby
3. Immunology- Roitt
4. Elements of Immunology – Rastogi, S.C.
5. Manual of Clinical Laboratory Immunology – Rose, N.R.

MB-CC-204**VIRUS & BACTERIOPHAGES****Credits-4**

Unit I Virus: Nature, Properties & Classification	Discovery of viruses, Nature and general properties of viruses, classification of viruses; methods in virology; purification and characterization of viruses, Morphology and chemical composition of viruses.
Unit II Viral Genetics and Physiology	Cultivation of virus, Assay of virus, Replication of virus, Viral genetics and variation. Serological properties of viruses, sub viral pathogens.
Unit III Bacteriophages	Historical developments and classification of bacteriophages. Structure and life-cycles of different DNA, RNA, lytic and lysogenic phages.
Unit IV Oncogenic viruses and viral oncogenesis	Oncogenic viruses and viral oncogenesis. Virus cell interaction. Interferon, Intracellular control of virus infection. Viral diversity & Ecology

Recommended Textbooks and References:

1. Introduction to modern Virology --- Dimmock
2. Text Book of Microbiology ---Narayan, A &Panikar, J.
3. Introduction to Viruses --- Biswas & Biswas
4. Medical Microbiology --- Greenwood.
5. Virology –Voyles
6. Pelczar,M.J.,Reid,R.D.,&Chan,E.C.(2001).*Microbiology*(5thed.). New York:McGraw-Hill.
7. Willey,J.M.,Sherwood,L.,Woolverton,C.J.,Prescott,L.M.,&Willey,J.M.(2011). *Prescott's Microbiology*. New York: McGraw-Hill.
8. Matthai,W.,Berg,C.Y.,&Black,J.G.(2005).*Microbiology,Principlesand Explorations*.Boston,MA:JohnWiley&Sons.
9. Brock Biology of Microorganisms –Madigan &Martinko

MB-CC-205
LABORATORY
Credits-6

Syllabus	<ol style="list-style-type: none">1. Preparation of buffers2. Determination of Blood group and Rh factor.3. Demonstration of agglutination test (Slide & Tube).4. Precipitation reaction (fluid / gel) between antigen and antibody using agarose gel.5. Immunodiffusion, immunoelectrophoresis6. Experiment for cultivation of virus using chick embryo.7. Estimation of titre value by Haemagglutination and Haemagglutination inhibition test8. Preparation of phage stocks and filtration of phages and bacteria.9. Identification, standardization, qualitative analysis & quantitative estimation of Carbohydrates and Proteins.10. Extraction and estimation of sugars from live source.11. Isolation of genomic DNA12. Isolation of plasmid DNA13. Quantitative analysis of DNA by using UV Spectrophotometer14. Agarose Gel Electrophoresis technique (run of Plasmid DNA & Genomic DNA)15. Isolation of crude protein16. Separation of proteins by SDS-PAGE.17. Study of normal micro flora of human body: a. skin and b. mouth.18. Isolation and identification of enteric pathogenic microbes from animal faecal samples.19. Demonstration of antibiotic resistance of bacteria.20. Determination of MIC of antibiotics against microorganisms.21. Slides / Paper Slides of medically pathogenic microbial species.
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Recommended Textbooks and References:

1. Green, M. R., & Sambrook, J. (2012). *Molecular Cloning: a Laboratory Manual*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press.

VALUE ADDED COURSE



SUMMER INTERNSHIP/INDUSTRIAL VISIT/ SWAYAM OR NPTEL COURSES Credit-0

<p>Summer Internship/Industrial Visit: Project proposal preparation Poster presentation Oral presentation</p>	<p>Selection of research lab/industry and research topic: Students should first select a lab wherein they would like to pursue their dissertation. The supervisor or senior researchers should be able to help the students to read papers in the areas of interest of the lab and help them select a topic for their project. The topic of the research should be hypothesis driven. Review of literature: Students should engage in systematic and critical review of appropriate and relevant information sources and appropriately apply qualitative and/or quantitative evaluation processes to original data; keeping in mind ethical standards of conduct in the collection and evaluation of data and other resources.</p> <p>Students will have to present the topic of their project proposal. They should be able to explain the novelty and importance of their research topic.</p> <p>At the end of their project, presentation will have to be given by the students to explain work done by them in detail. Along with summarizing their findings they should also be able to discuss the future expected outcome of their work.</p> <p>For Industrial Visit: Students should first select an industry wherein they would like to pursue their dissertation. Students should be able to submit a write up and presentation based on their learnings from the various processes/applications being followed in an industrial set up.</p>
<p>Swayam/NPTEL Courses</p>	<p>Students must select any course of their choice from the list of courses under Bioscience category of either Swayam or NPTEL. They should attend all the lectures and routinely appear for the exams being conducted.</p>

Semester Three

MB-CC-301
MEDICAL
MICROBIOLOGY
Credits-4

Unit I Medical Microbiology: Introduction	Historical landmarks and chronological development of Medical Microbiology; Normal micro flora of human body (skin, oral cavity, respiratory, GI and urinogenital tracts); mechanism of bacterial adhesion, colonization and invasion, role of Aggressions; bacterial toxins (exo and endo). Infections, nonspecific defense mechanisms; physical / mechanical barriers, antagonism of indigenous flora; antibacterial substances (lysozyme, bacteriocin, β - lysine and other polypeptides). Antiviral substances (interferon, reactive nitrogen intermediates, defensins); virulence: characteristics measurements and factors, attenuation.
Unit II Immunity in bacterial infections and immunopathology	Bacterial pathogens and associated diseases; Study of Gram +ve bacteria (<i>Staphylococcus</i> , <i>Streptococcus</i> , <i>Pneumococcus</i> , <i>Bacillus</i> , Actinomycetes with special reference to <i>Corynebacterium</i> , <i>Mycobacterium</i> and <i>Clostridium</i>); Study of Gram –ve bacteria (<i>Hemophilus</i> , <i>Vibrio</i> , <i>Pseudomonas</i> , <i>Neisseria</i> , <i>Bordetella</i> , <i>Salmonella</i> , <i>Shigella</i> and <i>E. Coli</i>). Study of <i>Spirochetes</i> and other bacteria such as: <i>Treponemes</i> , <i>Leptospira</i> , <i>Borrelia</i> , <i>Mycoplasma</i> , <i>Chlamydia</i> , <i>Rickettsia</i> and non-sporing anaerobes like <i>Legionella</i> , <i>Campylobacter</i> and <i>Helicobacter</i> .
Unit III Immunity in viral & fungal infections and immunopathology	Viral pathogens and associated diseases: DNA and RNA viruses including HIV, Oncogenic viruses, H1N1. Pathogenic Fungi: Thrush, Ring worm – Subcutaneous, Cutaneous and Systemic.
Unit IV Parasitic infections: Pathogenesis and immunity. Nosocomial Infection	Parasitic Pathogens: Protozoa (<i>Trypanosoma</i> , <i>Leishmania</i> , <i>Giardia</i>), Helminthes (<i>Wuchereria</i> , <i>Taenia</i>). Nosocomial infection: Common types of hospital infections and their diagnosis and control.

Recommended Textbooks and References:

1. Text Book of Microbiology -- Narayan, A & Panikar, J.
2. Medical Microbiology -- Greenwood.
3. Willey, J.M., Sherwood, L., Woolverton, C.J., Prescott, L.M., & Willey, J.M. (2011). *Prescott's Microbiology*. New York: McGraw-Hill.
4. Matthai, W., Berg, C. Y., & Black, J.G. (2005). *Microbiology, Principles and Explorations*. Boston, MA: John Wiley & Sons.
5. Brock Biology of Microorganisms – Madigan & Martinko

MB-CE-302
INDUSTRIAL
MICROBIOLOGY

Credits-4

Unit I Industrially important Microbes Fundamentals of Fermentation	History, development and scope of Industrial microbiology Industrially important microorganisms: Bacteria, Fungi, Actinomycetes, Microalgae. Fundamentals of fermentation, type, design and method of operations of fermenters. Application of Fermenter and Bioreactor, Microbial fermentation process, Types of fermentation processes, Downstream processing for recovery of different industrial products.
Unit II Alcoholic Production	Alcoholic production; ethyl alcohol, beer, wine, vinegar, organic acids: Citric acid & lactic acid, amino acids: Lysine & Glutamic Acid Antibiotics: Penicillin & Streptomycin, Single cell protein.
Unit III Industrial Production	Industrial production of Vinegar, Vitamin: Riboflavin, Enzymes: Amylase & Cellulase, Elementary idea about single cell oil production by microorganisms; Microbes in production of biofuels;
Unit IV Microbiological Assays	Microbes in production of biofuels; Microbiological assays: principle, methodology, types with examples, assay of antibiotics and amino acids. Sterility testing of pharmaceutical products.

Recommended Textbooks and References:

1. Industrial Microbiology – Cassida, J. R.
2. Industrial Microbiology – Patel, A. H.
3. Industrial Microbiology – Miller, B. M & Litsky
4. Industrial Microbiology – Prescott & Dunn
5. Advances in Applied Microbiology – Ed. Perlman
6. Principles of Fermentation Technology – Stanbury
7. Industrial Microbiology – Crooger & Crooger
8. Industrial Microbiology-M.J.Waites

MB-CE-303
MICROBIAL
BIOTECHNOLOGY
Credits-4

<p>Unit I Microbial Biotechnology: Introduction</p> <p>Microbial Strain Improvement</p> <p>Basic design & operation of Bioreactors</p>	<p>Introduction, scope and historical development; Isolation, screening and genetic improvement of Industrial strains, Strategies for its selection and improvements. Large scale production using recombinant microorganisms, Product recovery, Metabolic path ways and metabolic control mechanisms, Biotechnology innovations in chemical industries, biocatalysts in organic chemical synthesis, Design of fermenter/ bioreactors- Design aspects of flask, stirred tank reactor, Air-lift fermenter, Tower fermenter, Kinetics of operation of bioreactors, Batch, Fed-batch, Continuous processes, Design and operation of immobilized cell reactors.</p>
<p>Unit II Production, Recovery, Assay and Applications</p>	<p>Applications of r-DNA technology: Medicine (Hybridoma technology, vaccine development, Hormone production etc), Agriculture (Bio-fertilisers, bio-insecticides), Production, Recovery, Assay and Applications with Respect to Following Examples: Vitamin B and C, Antibiotics (Penicillin acylase, Cycloheximide, Tetracyclins), Microbial enzymes (Chitinase, Lipase), Polysaccharide (Xanthum gum and PHB), Citric acid, Ethanol, Wine, SCP, Recombinant and synthetic vaccines, Bioemulsifier/Biosurfactant, Biopolymers, Bioleaching; Bioremediation, biodegradation and its management, Mushroom production, Production of single cell protein</p>
<p>Unit III Drug Designing</p>	<p>Drug designing, Antimicrobial agents (Therapeutic drugs): Characteristics & Mode of action</p>
<p>Unit IV Molecular Biotechnology</p> <p>Advances in Microbial Technology</p>	<p>DNA sequencing: By Maxam-Gilbert and Sanger's methods, next-generation sequencing. DNA finger printing, RFLP, RAPD. Microarrays, Amplification of DNA, PCR, Multiplex PCR, Development and applications of Biosensor. Metagenomics and Meta transcriptomics: potential, methods to study and application/use</p>

Recommended Textbooks and References:

1. Microbial Biotechnology -- Alexander Glazer
2. Microbial Biotechnology -- Yuan Kun Lee
3. Modern industrial microbiology and Biotechnology---Nduka Okafor

MB-CT-304
BIOINFORMATICS
& BIOSTATISTICS
Credits-4

Unit I Basics of Computer Application Bioinformatics: Scope & Application	Computer application: basics of computer, types of network, intra & internet, internet and the microbiologist Overview of Bioinformatics – Scope and Application.
Unit II Databases	Data base: types, NCBI, PDB, Expasy, Gene Bank; Genomics and genome project. NCBI Data model, DNA and Protein Sequence database, Genomics and genome project, Sequence submission to database, Literature database (PubMed, Biomed Central, Medline)
Unit III Sequence Alignment	Data base searching, Sequence alignment – pair wise and multiple; Practical aspects of multiple sequence alignment (Clustal w, Clustal x), phylogenetic tree,
Unit IV Biostatistics	Introduction to Biostatistics, terminology and symbols, applications of statistics in biological research, collection and representation of data, measures of central tendency (Mean, Median, Mode), Coefficient of variation, Standard Deviation, Analysis of variation (ANOVA), measures of dispersion, Tests of significance('t' test, 'f' test & chi-square test), probability, correlation and regression analysis, Introduction to statistical software and handling.

Recommended Textbooks and References:

1. Wayne W. Daniel, Biostatistics --- A foundation for Analysis in the Health Sciences
2. Prem S. Mann --- Introductory Statistics
3. Campbell and Heyer --- Discovering Genomice, Proteomics & Bioinformatics
4. John A. Rice --- Mathematical Statistics and Data AnalysisLevine,M.M.(2004).New

MB-CC-305

LABORATORY:

Credits-6

Syllabus	<ol style="list-style-type: none">1. Sterility testing of pharmaceutical products.2. Screening of antibiotic products from soil samples.3. Isolation of microbes from sweets amenable for spoilage.4. Identification of coliforms from samples collected from road side food stalls.5. Isolation of micro flora from spoiled / putrefied fruits / vegetables.6. Gradation of purity of milk samples using MBRT test.7. Qualitative test for production of enzymes by microbes: Amylase, Cellulase, Proteinase, Pectinase, Lipase and Gelatinase, Organic acids: Citric acid8. Bacterial cell immobilization9. Qualitative test for ethanol production by <i>S. cerevisiae</i>10. PCR methods / advantages – Demonstration.11. Slides / Paper Slides of medically pathogenic microbial species.12. Experimental design to conduct biostatistical experiments like student t – test and χ^2 test.
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VALUE ADDED COURSE

**RESEARCH
METHODOLOGY
AND SCIENTIFIC
COMMUNICATION
SKILLS
Credit-0**

Unit I Research Methodology & Preparation for research	Research Methodology: Processes, aims & objectives, Choosing a mentor, lab and research question; maintaining a lab notebook.
Unit II Process of communication	Concept of effective communication- setting clear goals for communication; determining outcomes and results; initiating communication; avoiding breakdowns while communicating; creating value in conversation; barriers to effective communication; non-verbal communication- interpreting non-verbal cues; importance of body language, power of effective listening; recognizing cultural differences; Presentation skills - formal presentation skills; preparing and presenting

	using over-head projector, PowerPoint; defending interrogation; scientific poster preparation & presentation; participating in group discussions; Computing skills for scientific research - web browsing for information search; search engines and their mechanism of searching; hidden Web and its importance in scientific research; internet as a medium of interaction between scientists; effective email strategy using the right tone and conciseness
Unit III Scientific communication	Technical writing skills - types of reports; layout of a formal report; scientific writing skills - importance of communicating science; problems while writing a scientific document; plagiarism, software for plagiarism; scientific publication writing: elements of a scientific paper including abstract, introduction, materials & methods, results, discussion, references; drafting titles and framing abstracts; publishing scientific papers - peer review process and problems, recent developments such as open access and non-blind review; plagiarism; characteristics of effective technical communication; scientific presentations; ethical issues; scientific misconduct, Use of search engines for scientific data mining, Use of reference management tools, statistical data analysis using software.

Recommended Textbooks and References:

1. Valiela, I. (2001). *Doing Science: Design, Analysis, and Communication of Scientific Research*. Oxford: Oxford University Press.
2. *On Being a Scientist: a Guide to Responsible Conduct in Research*. (2009). Washington, D.C.: National Academies Press.
3. Gopen, G.D., & Smith, J.A. *The Science of Scientific Writing*. *American Scientist*, 78 (Nov-Dec 1990), 550-558.
4. Mohan, K., & Singh, N.P. (2010). *Speaking English Effectively*. Delhi: Macmillan India.

Semester Four

MB-CC-401

ENVIRONMENTAL MICROBIOLOGY

Credit: 4

Unit I Aquatic Microbiology	Aquatic Microbiology: Water ecosystem (Fresh & Marine) and zonation, microbial assessment of water quality, Waste water treatment (Aerobic and Anaerobic Treatment), Case Studies: (Treatment schemes of various industries)
Unit II Aeromicrobiology	Aero-microbiology: Works on aero-microbiology in India (Aflatoxin by aero - fungi), aero- micro flora of hospitals, microbial aero-allergens, phylloplane micro flora and dispersal of spores.
Unit II Environmental Pollution & related diseases	Environmental Pollution: types & control; Major water borne diseases and prevention (Cholera & Typhoid), Major air borne diseases (Tuberculosis and Influenza), Major food borne diseases and prevention (Poliomyelitis and Amoebiasis).
Unit IV Bioremediation Process	Bioremediation process: Strategy, monitoring and efficacy. Types and Application of Bioremediation, Biodegradation of xenobiotics, plastics, oils & hydrocarbons, Solid waste Management; Biosensors and its role in environmental monitoring.

Recommended Textbooks and References:

1. Introductory Microbiology - R.P. Singh & B. D. Singh
2. A text book of Microbiology – Prescott.
3. Microbiology – Pelczar
4. Microbial Ecology – Atlas & Barth
5. Environmental Science – Cunningham
6. Microorganisms in Bioremediation – Dillip K. Markandey
7. Roles of M.O's in Management of Environmental Pollution – R. Tiwari
8. Microbial Ecology – R.Campbell
9. Environmental Micobiology---R.Mitchell.
10. Waste water Engineering—Treatment, Disposal and Reuse, Tata McGraw Hill
11. Environmental Chemistry ---A.K De
12. Environmental Microbiology--- Ian L. Pepper, Charles P. Gerba and Terry J. Gentry

MB-CE-402**SOIL & AGRICULTURAL MICROBIOLOGY****Credit: 4**

Unit I Soil & its Ecosystem	Discoveries in soil microbiology, Classification of soil and soil types, soil microbes (Algae, Bacteria, Actinomycetes, Nematodes and Fungi). Distribution of micro-organisms in different soil types, rhizosphere and rhizoplane microorganisms. Inter-relationships between plants and micro-organisms, rhizosphere concept, R: S ratio, rhizoplane, phyllosphere; their importance in plant growth. Mycorrhiza, Soil enzyme activities and their importance. Qualitative and quantitative estimation of micro-organisms in soil. Soil Microbial biomass, influence of environmental factors on soil microflora-moisture, PH temperature, organic matter etc,
Unit II Biogeochemical Cycling of Nutrients	Microbial biomass – An index for soil fertility. Organic matter decomposition, Humus formation, Biogeochemical cycling (C, N, S, P): carbon cycle, N ₂ cycle. Microbial transformation of phosphorus, sulphur, iron and manganese. Degradation of cellulose, hemicellulose, lignin, pectin and chitin.
Unit III	
Unit IV Microbial Biofertilizers & Crop Protection	Microbial biofertilizers, biological nitrogen fixation (symbiotic and non-symbiotic), green manuring, mass cultivation of cyanobacteria biofertilizers. Crop protection – microbial herbicides, bacterial insecticides (<i>Pseudomonas</i> , <i>Bacillus thuringiensis</i>), virus insecticides, entomo – pathogenic fungi. Microbial pesticides, biodegradation of pesticides. Effect of pesticides on soil micro-flora

Recommended Textbooks and References:

1. Soil Microbiology – Suba Rao
2. Soil Microbiology – Alexander Martin
3. Soil Microbiology – Mark, Coyne
4. Soil Biotechnology – Lynch, Martin
5. Soil Microbiology – Paul, E. Eiego

6. Introductory Microbiology - R.P. Singh & B. D. Singh
7. A text book of Microbiology – Prescott.
8. Microbiology – Pelczar

MB-CE-403

FOOD MICROBIOLOGY

Credits-4

Unit I Introduction & Scope of Food Microbiology	Introduction and scope of food microbiology. Perspective on food safety and food biotechnology. Common micro-organisms in food. Factors of special significance in food microbiology- Principles influencing microbial growth in foods; spores and their significance; indicator organisms and microbiological criteria.
Unit II Microbial Spoilage of food	Microbial spoilage of foods, meat, milk, fish, fruits, vegetables and their products; Food spoilage: process and its control, Food borne infection and intoxications, Food poisoning and food-borne pathogenic bacterial diseases.
Unit III Food Fermentation; Microbes as food	Food fermentation; Fermented dairy, vegetable and meat products. Microbes as food (SCP, Fungi, Bacteria, Algae), Microbial Flora of milk and dairy products. Microorganisms on fermented foods, Microorganisms on foods and food amendments. Role of microorganisms in beverages – tea and coffee fermentations. Applications of microbial enzymes in dairy industry (Protease, Lipases).
Unit IV Preservatives and Preservation Methods	Preservatives and preservation methods: Physical methods, chemical preservatives and natural antimicrobial compounds Bacteriocins and their applications. Biologically based preservation system and probiotic bacteria Advanced techniques in detecting food-borne pathogens and their toxins. Critical control point systems in controlling microbiological hazards in foods

Recommended Textbooks and References:

1. Food Microbiology – Doyle
2. Food Microbiology – Frazier
3. Food Microbiology – Adams & Moss
4. Modern Food Microbiology – Jav. I.M.
5. Food Microbiology – Neelam Khetarpaul
6. International Food Safety Handbook – K. V. Heijden
7. Text book of Microbiology – Prescott (TMH)
8. Outlines of Dairy Technology – Sukumar De (Oxford)
9. Milk and Milk Products (4th edition) – C. H. Eckles (TMH).
10. Introductory Microbiology – R. P. Singh (C.B.D. Publication)
11. Laboratory Manual for Milk Quality Control Testing – J. G. Davis

MB-CE-403

INTELLECTUAL PROPERTY RIGHTS, BIOSAFETY, AND BIOETHICS

Credits-4

Unit I Introduction to IPR	Introduction to intellectual property; types of IP: patents, trademarks, copyright & related rights, industrial design, traditional knowledge, geographical indications, protection of new GMOs; International framework for the protection of IP; IP as a factor in R&D; IPs of relevance to biotechnology and few case studies; introduction to history of GATT, WTO, WIPO and TRIPS; plant variety protection and farmers rights act; concept of ‘prior art’: invention in context of “prior art”; patent databases - country-wise patent searches (USPTO, EPO, India); analysis and report formation.
Unit II Patenting	Basics of patents: types of patents; Indian Patent Act 1970; recent amendments; WIPO Treaties; Budapest Treaty; Patent Cooperation Treaty (PCT) and implications; procedure for filing a PCT application; role of a Country Patent Office; filing of a patent application; precautions before patenting-disclosure/non-disclosure - patent application- forms and guidelines including those of National Bio-diversity Authority (NBA) and other regulatory bodies, fee structure, time frames; types of patent applications: provisional and complete specifications; PCT and conventional patent applications; international patenting-requirement, procedures and costs; financial assistance for patenting introduction to existing schemes; publication of patents-gazette of India, status in Europe and US; patent infringement- meaning, scope, litigation, case studies and examples; commercialization of patented innovations; licensing – outright sale, licensing, royalty; patenting by research students and scientists-university/organizational rules in India and abroad, collaborative research - backward and forward IP; benefit/credit sharing among parties/community, commercial (financial) and non-commercial incentives
Unit III Biosafety National & International Regulation	Biosafety and Biosecurity - introduction; historical background; introduction to biological safety cabinets; primary containment for biohazards; biosafety levels; GRAS organisms, biosafety levels of specific microorganisms; recommended biosafety levels for infectious agents and infected animals; definition of GMOs & LMOs; principles of safety assessment of transgenic plants – sequential steps in risk assessment; concepts of familiarity and substantial equivalence; risk – environmental risk assessment and food and feed safety assessment; problem formulation – protection goals, compilation of relevant information, risk characterization and development of analysis plan; risk assessment of transgenic crops vs cisgenic plants or products derived from RNAi, genome editing tools. International regulations – Cartagena protocol, OECD consensus documents and Codex Alimentarius; Indian regulations – EPA act and rules, guidance

	documents, regulatory framework – RCGM, GEAC, IBSC and other regulatory bodies; Draft bill of Biotechnology Regulatory authority of India - containments – biosafety levels and category of rDNA experiments; field trails – biosafety research trials – standard operating procedures - guidelines of state governments; GM labeling – Food Safety and Standards Authority of India (FSSAI).
Unit IV Bioethics	Introduction, ethical conflicts in biological sciences - interference with nature, bioethics in health care - patient confidentiality, informed consent, euthanasia, artificial reproductive technologies, prenatal diagnosis, genetic screening, gene therapy, transplantation. Bioethics in research – cloning and stem cell research, Human and animal experimentation, animal rights/welfare, Agricultural biotechnology - Genetically engineered food, environmental risk, labeling and public opinion. Sharing benefits and protecting future generations - Protection of environment and biodiversity – biopiracy.

Recommended Textbooks and References:

1. IPR, Biosafety and Bioethics --- Goel & Parashar

**MB-CC-405
DISSERTATION
Credits-6**

Syllabus Planning and performing experiments	Based on the project proposal submitted in earlier semester, students should be able to plan, and engage in, an independent and sustained critical investigation and evaluate a chosen research topic relevant to biological sciences and society. They should be able to systematically identify relevant theory and concepts, relate these to appropriate methodologies and evidence, apply appropriate techniques and draw appropriate conclusions. Senior researchers should be able to train the students such that they can work independently and are able to understand the aim of each experiment performed by them. They should also be able to understand the possible outcomes of each experiment
Syllabus Thesis writing	At the end of their project, thesis has to be written giving all the details such as aim, methodology, results, discussion and future work related to their project. Students may aim to get their research findings published in a peer-reviewed journal. If the research findings have application-oriented outcomes, the students may file patent application.

Non-Credit Course
Cultural Heritage of South Odisha
(ଦକ୍ଷିଣ ଓଡ଼ିଶାର ସଂସ୍କୃତିକ ବିଭବ)

Aim of the Course (ପାଠ୍ୟକ୍ରମର ଲକ୍ଷ୍ୟ)

Kabi Samrat Upendra Bhanja is the master-spirit of Odia Language and Culture during Medieval period. The campus of Berhampur University has been rightly named after Kabi Samrat Upendra Bhanja as 'BHANJA BIHAR'. South Odisha is the adorable storehouse of literary and cultural wealth of ancient and medieval Odisha which has elicited remarkable national acclaim. This course has been introduced with a view to familiarizing all the P.G. Students of Berhampur University with the excellent craftsmanship exemplified by the literary stalwarts including Kabi Samrat Upendra Bhanja along with the Arts, Culture and Folk Tradition of South Odisha. (ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ମହାନାୟକ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ । ବ୍ରହ୍ମେଶ୍ୱର ବିଶ୍ୱବିଦ୍ୟାଳୟ ତାଙ୍କ ନାମପର 'ଭଞ୍ଜବିହାର' ଭାବପର ନାମିତ୍ । ଗଞ୍ଜାମ ସମତଳ ଦ୍ୱିଶ ଓଡ଼ିଶା ସମଗ୍ର ରାଜ୍ୟର ବୁଧସଂସ ପକଳିସର । ଏହାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-ପାକେରମ୍ପରା ସବବଭାବରତ୍ନାୟ ସ୍ୱୀକୃତିପ୍ରାପ୍ତ । ଏହାକୁଦୃଷ୍ଟିପର ରଖି ବ୍ରହ୍ମେଶ୍ୱର ବିଶ୍ୱବିଦ୍ୟାଳୟର ସ୍ନାତ୍ତକାର ପେଶୀର ସମସ୍ତ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁକବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ ସମତଳ ଦ୍ୱିଶ ଓଡ଼ିଶାର ଅନନ୍ୟାନ୍ୟ ସାହିତ୍ୟିକ ପ୍ରତିଭା ଏବଂ ଏହିଅଞ୍ଚଳର କଳା, ସଂସ୍କୃତି, ପାକେରମ୍ପରା ସମ୍ପର୍କପର ସାଧାରଣ ଧାରଣା ପ୍ରଦାନ କରିବା ଲକ୍ଷ୍ୟରେ ଅଧ୍ୟୟନ ବ୍ୟବସ୍ଥା କରାଯାଇଛି ।)

Details of the Course

This Paper consists of 50 marks with following 4 Units.

Unit- I : Literary works of Kabi Samrat Upendra Bhanja

Unit-II : Other Litterateurs of South Odisha

Unit-III: Cultural Heritage of South Odisha

Unit-IV: Folk and Tribal Traditions of South Odisha

ୟୁନିଟ୍-୧: କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କୃତି ଓ କୃତିତ୍ୱ

ୟୁନିଟ୍-୨: ଦ୍ୱିଶ ଓଡ଼ିଶାର ଅନ୍ୟାନ୍ୟ ସାରସ୍ୱତ ସାଧକ

ୟୁନିଟ୍-୩: ଦ୍ୱିଶ ଓଡ଼ିଶାର ସାଂସ୍କୃତିକ ବିଭବ

ୟୁନିଟ୍-୪: ଦ୍ୱିଶ ଓଡ଼ିଶାର ଆଦିବାସୀ ଓ ପାକେରମ୍ପରା

Course Outcome (ପାଠ୍ୟକ୍ରମର ନିଷ୍ପତ୍ତି)

The teaching imparted to the P.G. students of Berhampur University on the various dimensions of the literary and cultural heritage of South Odisha will help them to acquire a valuable understanding of the same. They will be inspired adequately to take the positives learnt from the course and use them in future in their personal literary and cultural pursuits and thereby promote the literature and culture of Odisha on a global scale. (ଓଡ଼ିଆ ସାହିତ୍ୟ ଓ ସଂସ୍କୃତିର ଏହିଭିତ୍ତିକ ଗୁରୁତ୍ୱକୁ ସ୍ୱୀକୃତିପର ଲକ୍ଷ୍ୟରେ ଅଧ୍ୟୟନ କରିବା ଦ୍ୱାରା ପକବଳ ପୟ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜ ଓ ଦ୍ୱିଶ ଓଡ଼ିଶାର କଳା-ସାହିତ୍ୟ-ସଂସ୍କୃତି-ଆଦିବାସୀ ପାକେରମ୍ପରା ଓ ପାକେରମ୍ପରା ସମ୍ପର୍କପର ବିଶ୍ୱବିଦ୍ୟାଳୟର ଛାତ୍ରଛାତ୍ରୀ ସପେକ୍ଷ ପହାଲୋରିପବ; ତାହା ବୁଝି, କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ରଭଞ୍ଜଙ୍କ ସହିତ ଦ୍ୱିଶ ଓଡ଼ିଶାର

ସାହିତ୍ୟିକେରିମଣ୍ଡଳ ଏବଂ ଏହି ଅଞ୍ଚଳର ସାଂସ୍କୃତିକ ବିଭବ ଓ ପାଠକେରମିରା ସମ୍ପର୍କପର ବିଶ୍ୱବିଦ୍ୟାଳୟର ଛାତ୍ରଛାତ୍ରୀମାପନ ମଧ୍ୟ ସମୟକ ଜାନ ଆହରଣପର ବ୍ରତୀ ପଢ଼ାଢ଼ୋରିପବ ।

Recommended Electives for Semester III

ADVANCED MICROSCOPY

Credits-4

<p>Unit I Confocal Microscopy</p>	<p>Principles of confocal fluorescence microscopy, resolution and point spread function, Light sources in fluorescence microscopy, The advanced fluorescence microscope optical train, pinhole and signal channel configurations, detectors, pixels and voxels, contrast, spatial sampling: temporal sampling: signal-to-noise ratio, multichannel images.</p>
<p>Unit II Multiphoton Microscopy Advanced Fluorescence Microscopy Techniques</p>	<p>Multiphoton microscopy, Image deconvolution and quantification, Advanced fluorescence microscopy techniques: Foerster Resonance Energy Transfer (FRET) microscopy, Fluorescence Lifetime Imaging microscopy (FLIM) and Fluorescence Correlation Spectroscopy (FCS), Total internal Reflection Fluorescence (TIRF) microscopy, Breaking the diffraction barrier: Concept of optical superresolution, Stimulation Emission Depletion (STED) microscopy, Single molecule localization microscopy: Stochastic Optical Reconstruction Microscopy (STORM) and Photoactivation Localization Microscopy (PALM).</p>

PLANT & ANIMAL VIRUSES

Credits-4

<p>Unit I Animal Virology</p>	<p>Life cycles: DNA viruses with special reference to herpes, pox, adeno, SV40; RNA viruses with special reference to measles, rabies, polio, influenza, retroviruses; Oncoviruses and Lentiviruses (HIV). 2. Slow and persistent viruses. 3. Mechanism of virus persistence, Genetic stability of viruses,</p>
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	Influence on host cell growth control, Immune response against viruses. 4. Antiviral drugs and virus vaccines
Unit II Plant Virology	Classification and nomenclature. 2. Effects of viruses on plants: Appearance of plants, histology, physiology and cytology of plants. 3. Diagnostic techniques to detect viruses: In seeds, seed stocks, and diseased plants (seed morphology, seedling symptomatology, indicator plants, serological methods, histo-chemical tests and fluorescence microscopy) 4. Behaviour of viruses in plants: Early stages of infection, biochemistry of virus replication, cellular sites of virus replication and assembly and accumulation of virus particles. 5. Transmission of plant viruses: With vectors (insects, nematodes, fungi, etc.) without vectors (contact, seed and pollens). 6. Prevention of crop losses due to virus infection: Virus free planting material, vector control, disease forecasting. 7. Life cycle: TMV, Cauliflower mosaic virus etc

EXTREMOPHILES & EVOLUTION

Credits-4

Unit I Extremophiles	Isolation, classification and properties of extremophiles (Hyperthermophiles, Psychrophiles, Halophiles, Acidophiles, Methanogenic extremophiles, etc.) 2. Adaptation mechanisms of extremophiles, biotechnological applications of extremophiles Life cycles: DNA viruses with special reference to herpes, pox, adeno, SV40; RNA viruses with special reference to measles, rabies, polio, influenza, retroviruses; Oncoviruses and Lentiviruses (HIV). 2. Slow and persistent viruses. 3. Mechanism of virus persistence, Genetic stability of viruses, Influence on host cell growth control, Immune response against viruses. 4. Antiviral drugs and virus vaccines
Unit II Evolution	History and development of evolutionary theory, Neo Darwinism: Spontaneous mutation controversy, evolution of rates of mutation, types of selection, levels of selection, group selection and selfish gene. 2. Sociobiology, kin selection, evolutionary stability of cooperation, sociality and multicellularity in microorganisms, Game theory. Co-evolutionary strategies, host parasite co-evolution, Neutral evolution and molecular clocks, phylogeny and molecular distances. 3. Molecular evolution: origin of life, the origin of new genes and proteins. Evolution of life histories, ageing, evolutionary trade offs, r and k selection, Evolutionary origin of biochemical disorders: The case of insulin resistance.

FUNGAL & ALGAL BIOTECHNOLOGY

Credits-4

Unit I Fungal enzymes & Fungal Products	Fungal enzymes-Conversion of biomass to bioenergy and high value products. Fungal products in agricultural management and other biological applications Pharmacologically active compounds produced using fungi. Fungal genetics- post genomic prospective. 4. Pharmacologically active compounds produced using fungi.
Unit II Biotechnological Application of Algae	Biotechnological applications of algae: Nutrient based supplements-lipids and polyunsaturated fatty acids (PUFA), protein rich cattle feed, phytosterols, polysaccharides, pigments, antioxidants, biofuels.

THERAPEUTICS: VACCINE TECHNOLOGY

Credits-4

Unit I Immune response to vaccination	Vaccination and immune response; Adjuvants in Vaccination; Modulation of immune responses: Induction of Th1 and Th2 responses by using appropriate adjuvants and antigen delivery systems - Microbial adjuvants, Liposomal and Microparticles as delivery systems; Chemokines and cytokines; Role of soluble mediators in vaccination; Oral immunization and Mucosal Immunity.
Unit II Vaccine types and design	History of vaccines, Conventional vaccines; Bacterial vaccines; Viral Vaccines; Vaccines based on routes of administration: parenteral, oral, mucosal; Basic principles of a vaccine action, a short history of vaccination, Mechanism of vaccine action, Active and passive immunization, General immunization practices, Live, killed, attenuated, sub unit vaccines, Toxoid vaccines, Role and properties of adjuvants, Recombinant DNA and protein based vaccines, plantbased vaccines, Reverse vaccinology, Peptide vaccines, Conjugate vaccines, Licensed vaccines, Viral Vaccine (Poliovirus vaccine-inactivated and Live, Rabies vaccines, Hepatitis A and B vaccines), Bacterial Vaccine (Anthrax vaccines, Cholera vaccines, Diphtheria toxoid), Parasitic vaccine (Malaria Vaccine), Vaccination of immunocompromised hosts.

<p>Unit III Vaccine technologies</p>	<p>New Vaccine Technologies; Rationally designed Vaccines; DNA Vaccination; Mucosal vaccination; New approaches for vaccine delivery; Engineering virus vectors for vaccination; Vaccines for targeted delivery (Vaccine Delivery systems); Disease specific vaccine design: Tuberculosis Vaccine; Malaria Vaccine; HIV/AIDS vaccine; New emerging diseases and vaccine needs (Ebola, Zika).</p>
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PHARMACEUTICAL MICROBIOLOGY

Credits-4

<p>Unit I Antimicrobial agents & Chemotherapy</p>	<p>Antimicrobial assays in liquid and solid media, susceptibility testing in liquid and solid media.</p> <p>Antibiotics that inhibit peptidoglycan biosynthesis, Drugs that interfere with the biosynthesis of the cell wall of mycobacteria, Fungal cell wall as a target for antimicrobial drugs, Ionophoric antibiotics, Antifungal agents that interfere with the function and biosynthesis of membrane sterols, Inhibitors of nucleic acid biosynthesis, Inhibitors of protein biosynthesis. Nitroheterocyclic antimicrobial agents, A unique antifungal antibiotic-griseofulvin, antiviral agents, antiprotozoal agents.</p> <p>Attack and defense: drug transport across cell walls and membranes.</p>
<p>Unit II Pharmaceutical Microbiology</p>	<p>Study of major groups of pharmacologically active molecules of plant, animal and microbial origins (Extraction and purification).</p> <p>Physical and chemical properties, metabolic activity, identification of drug target/receptors, elucidation of the mechanism of drug action, Drug interactions, toxicity and adverse reactions, toxicity testing, assays for mutagenicity, carcinogenicity, Pyrogenicity and allergy testing.</p> <p>Steps towards commercialization of drug 4. Regulations on drug, FDA.</p>

Recommended Electives for Semester IV

OMICS CONCEPT IN BIOLOGY

Credits-4

Unit I Introduction to Genomics	Introduction to Genomics: Pre and Post Genomic era, Major advancements in Genomic approaches, Epigenetics and Metagenomics, Forward versus reverse Genomics, Genome analysis-Genome editing approaches and their applications, Gene expression approaches and their applications. Next Generation Sequencing (NGS)-Illumina (Solexa), Roche 454, Sequencing by Oligonucleotide Ligation and detection (SOLiD), Ion Torrent Technology etc. Parallel sequencing, Nanopore sequencing, Sequence analysis and their applications: Human Genetics and Human Genome Project, Genomic insights into evolution, advantages of comparative genomic analysis, Analysis of microarray data.
Unit II Proteomics	Introduction, types of proteomics investigation and importance of proteomics Tools of proteomics-Separation technology (SDS PAGE, 2D PAGE), Liquid chromatography, Mass Spectrometry (Ionizers, analyzers and detectors), Protein and peptide microarray-based technology, Protein identification by peptide mass fingerprinting. Polymerase chain reaction (PCR)-directed protein in situ arrays, Structural proteomics, Applications of proteomics: Host-pathogen interaction, proteinprotein interaction, drug discovery.
Unit III Metabolomics	Basic concept of metabolomics, Metabolic fingerprinting, and metabolic profiling, Tools of metabolomics: Capillary electrophoresis, Gas chromatography (GC), Electrochemical detectors, Applications of Metabolomics in Biology

**MOLECULAR
DIAGNOSTICS:
SENSORS,
BIOSENSORS AND
OTHER
DIAGNOSTIC
TECHNIQUES**

Credits-4

Unit I Biosensors	Biosensors: Basic principles and operations, types of biosensors and applications of biosensors. Point of care medical diagnostic devices.
Unit II Medical Diagnostic Techniques	Biochemical, analysis, DNA / RNA based analysis, etc., Necessity for rapid and in situ medical analysis, Miniaturization of medical diagnostic devices- Microfabrication (Materials, processes, techniques for detection).
Unit III Microfluidics	Concept, Procedure, Applications and Challenges, Integrated microfluidic devices: Lab-on-a-chip, system-on-a-chip, micro-total analysis system (μ TAS), Present research scenario and future prospects.

**CANCER BIOLOGY
& CLINICAL
IMMUNOLOGY**

Credits-4

Unit I Cancer Biology	Cellular transformations during neoplastic growth, Classification of tumors based on histological, physiological, biochemical and immunological properties, Tumors of lymphoid system (lymphoma, myeloma, Hodgkin's disease). 2. Different mechanism of cancer cell adaptations, Hallmarks of cancer, Tumor suppressor genes and oncogenes, Tumor microenvironment and cancer cell heterogeneity, Physical and biological factors associated with tumorigenesis, Cancer cell heterogeneity and cancer stem cells, Molecular mechanism of metastasis, Epithelial to mesenchymal transition, mitogenic cell signaling (Ras-Raf-MAPK, ErbB, c-myc, signaling pathways), Concept of tumor associated and tumor specific antigens, role of immune system in cancer, Immunosurveillance and immunoediting.
Unit II Cancer Diagnostics	Cancer Diagnostics: Conventional and molecular methods, Clinical grading of tumors, Cancer therapy: basic principles of chemotherapy and radiation

	therapy, Emerging concepts in cancer therapy- Cancer immunotherapy, Passive and adoptive cancer immunotherapy, hyperthermia
Unit III Immunological Disorders	Pathophysiology, diagnosis, prognosis and therapeutic approaches to: a. Immunodeficiency disorders – Phagocytic deficiencies, humoral deficiencies, Cell mediated deficiencies, combined deficiencies and complement deficiencies. Autoimmune disorders (Immunopathological mechanisms and theories of autoimmunity) - Rheumatoid arthritis, Systemic Lupus Erythomatosus (SLE), Multiple myeloma, Myasthenia gravis.

GENE MANIPULATION/RECOMBINANT TECHNOLOGY

Credits-4

Unit I Introduction to Recombinant DNA Technology	General Strategies for Recombinant DNA Technology and Gene Cloning: genomic libraries, cDNA libraries, single gene cloning.
Unit II Tools of Recombinant DNA Technology	Enzymes - DNA ligase, Klenow enzyme, T4 DNA polymerase, Polynucleotide kinase, Alkaline phosphatase, Vectors - Plasmids, cosmids, lambda phage, shuttle vectors, YACs, BACs, Baculovirus and Pichia vectors system, Plant based vectors, Ti and Ri as vectors, Yeast vectors, Shuttle vectors, Cohesive and blunt end ligation, Linkers, Adaptors, Homopolymeric tailing.
Unit III Screening & Characterization of Transformants	Hybridization techniques, probe preparation using radioactive and nonradioactive ligands, detection of hybrids, site directed mutagenesis. 5. Genetic manipulation of animals. 6. Purification of recombinant proteins: His-tag, GSTtag, MBP-tag etc.

ENVIRONMENTAL POLLUTION MONITORING & WASTE WATER TREATMENT

Credits-4

<p>Unit I Environmental Pollution Monitoring: Basic Concepts Natural resources</p>	<p>Environmental Pollution Monitoring: Basic concepts. Natural Resources: Water and Land. Components and structure of the environment, Levels of organization in nature - Food chain and Trophic structure, Biogeochemical Cycles, Interdependence of man and environment.</p>
<p>Unit II Concepts, Causes and Consequences of Human Impact on the Natural Environment:</p>	<p>Concepts, Causes and Consequences of Human Impact on the Natural Environment: Definition and sources of pollution, Different types of pollution and their global, regional and local aspects: Air (Global warming, Green-house effect), Water, Radiation, Ewastes, Biomedical wastes</p>
<p>Unit III Waste Water Technology</p>	<p>Wastewater treatment system (unit process): Physical screening, flow equalization, mixing, flocculation, flotation, granular medium filtration, adsorption, Chemical precipitation, 02 03 10 15 02 M.Sc. Microbiology, SPPU: Syllabus 2019 Page 7 of 12 Semester III Subject Code Subject Title No. of Lectures/ Practical No. of Credits disinfection, Dechlorination, Biological: (aerobic and anaerobic, suspended and attached growth processes.) Working treatment systems and their analysis (reactions and kinetics, mass balance analysis, reactor types, Hydraulic character of reactors, selection of reactor type,) Critical operating parameters like DO, hydraulic retention time, mean cell residence time, F/M ratio etc, Effluent disposal, control and reuse. Water pollution control, Regulation and limit for disposals in the lakes, rivers, oceans, and land. Direct and indirect reuse of treated effluents and solid wastes, Current industrial wastewater treatment and disposal processes (Textile, food and dairy, paper and pulp manufacturing industries).</p>

NANOBIOTECHNOLOGY

Credits-4

Unit I Introduction to nanobiotechnology	Introduction to Nanobiotechnology; Concepts, historical perspective; Different formats of nanomaterials and applications with example for specific cases; Cellular Nanostructures; Nanopores; Biomolecular motors; Bio-inspired Nanostructures, Synthesis and characterization of different nanomaterials.
Unit II Nano-films	Thin films; Colloidal nanostructures; Self Assembly, Nanovesicles; Nanospheres; Nanocapsules and their characterization
Unit III Nano-particles	Nanoparticles for drug delivery, concepts, optimization of nanoparticle properties for suitability of administration through various routes of delivery, advantages, strategies for cellular internalization and long circulation, strategies for enhanced permeation through various anatomical barriers.
Unit IV Applications of nano-particles	Nanoparticles for diagnostics and imaging (theranostics); concepts of smart stimuli responsive nanoparticles, implications in cancer therapy, nanodevices for biosensor development
Unit V Nano-materials	Nanomaterials for catalysis, development and characterization of nanobiocatalysts, application of nanoscaffolds in synthesis, applications of nanobiocatalysis in the production of drugs and drug intermediates
Unit VI Nano-toxicity	Introduction to Safety of nanomaterials, Basics of nanotoxicity, Models and assays for Nanotoxicity assessment; Fate of nanomaterials in different stratas of environment; Ecotoxicity models and assays; Life Cycle Assessment, containment.