

PARADIP COLLEGE

PARADIP, JAGATSINGHPUR -754142

course OUTCOME

Session: 2022-23

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| Name of the Programme: B.A. English | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.A. | CORE - 1 | British Poetry and Drama: 14th to 17th Centuries | CO1 | The paper seeks to introduce the students to British poetry and drama from the 14thtothe17thcenturies.Theperiodisremarkableinmanyways:14thcentury poetry evokes an unmistakable sense of “modern” and the spirit of Renaissance is marked in the Elizabethan Drama. The Reformation brings about sweeping changes in religion and politics. A period of expansion of horizons: intellectual and geographical. It offers the students an exploration of certain seminal texts that set the course of British poetry andplays. |
| SEM 1 B.A. | CORE - 2 | British Poetry and Drama: 17th and 18th Century | CO1 | The objective of this paper is to acquaint students with the Jacobean and the 18thcenturyBritishpoetryanddrama,thefirstaperiodoftheacidsatireandthe comedy of humors; and the second a period of supreme satiric poetry and the comedy of manners. This paper will teach, particularly, 17th C: Period of the EnglishRevolution(1640–60);theJacobeanperiod;metaphysicalpoetry;cavalier poetry; comedy of humors; masques and beast fables. 18th C: Puritanism; Restoration; Neoclassicism; Heroic poetry; Restoration comedy; Comedyof  manners. |
| SEM 1 B.A. | GE-1 | Academic Writing and Composition | CO1 | This is a generic academic preparatory course designed to develop thestudents’ writing skills from basic to academic and research purposes. The aim of this course is to prepare students to succeed in complex academic tasks in writing along with an improvement in vocabulary andsyntax. |
| SEM 1 B.A. | SEC 1 | Skill Enhancement Compulsory Course for Arts | CO1 | The purpose of this course is twofold: to train students in communication skills and to help develop in them a facility for communicative English. Since language itiswhichbindssocietytogetherandservesasacrucialmediumofinteractionas wellasinterchangeofideasandthoughts,itisimportantthatstudentsdevelopa capacity for clear and effective communication, spoken and written, at a relativelyyoungage.Theneedhasbecomeevenmoreurgentinaneraof  globalization and the increasing social and cultural diversity that comes with it. |
| SEMESTER - II | | | | |
| SEM 2 B.A. | CORE -3 | British Literature: 18th Century | CO1 | Theobjectiveofthepaperistoacquaintthestudentswithtworemarkableforms of literature: Essay and novel. The period is also known for its shift of emphasis from reason to emotion. The students will learn about Restoration, Glorious Revolution, Neo-classicism, andEnlightenment. |
| SEM 2 B.A. | CORE -4 | Indian Writing in English | CO1 | Though a late developer, Indian writing in English has been the fastest growing branch of Indian literature. It has delivered a rich and vibrant body of writing spanning all genres. As a ‘twice born’ form of writing, it partakes of both the native and alien perspectives and has an inherent inclination to be postcolonial. This paper attempts to introduce the students to the field of Indian writing in  English through some representative works. |
| SEM 2 B.A. | GE - 2 | Modern Indian Literature | CO1 | The paper aims at introducing students to the richness and diversity of modern Indian literature written in many languages and translated into English. |

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| SEM 2 B.A. | SEC 2 | Translation and Principles of Translation | CO1 | This paper seeks to make students aware of a fundamental process of human communication which involves movement between languages. Known by the familiartermoftranslation,thisprocessoftransferofmeaningandvaluesacross language borders is as inevitable as it is problematic and challenging. The paper would acquaint students with the ‘what’, ‘why’ and ‘how’ of translation, approaches and problems of translation, and it would also sensitize them tothe  various ways of reading a translation. |
| SEMESTER - III | | | | |
| SEM 3 B.A. | CORE – 5 | British Romantic Literature | CO1 | The paper aims at acquainting the students with the Romantic period and some of its representative writers. At the same time one of the chief objectives of the paper is to give the students with a broad idea of the social as well as historical contexts that shaped this unique upheaval. |
| SEM 3 B.A. | CORE – 6 | 19th Century BritishLiterature | CO1 | The paper seeks to expose students to the literature produced in Britain in the 19th century. The focus is mainly on prose (fictional and non-fictional) and criticism. The reading will attempt to formulate the ways in which the generic boundariesofthenovelareextendedbythenewsubjectmatterandsetting.The 19th century embraces three distinct periods of the Regency, Victorian andlate  Victorian. |
| SEM 3 B.A. | CORE – 7 | American Literature | CO1 | This course seeks to introduce students to the social, historical, cultural and critical contexts of American poetry as well as novel both in the 19th and 20th century. This background reading would enable students to better understand the close textual analysis of individual poems that would follow. |
| SEM 3 B.A. | GE - 3 | Language, Literature and Culture | CO1 | This is a broad-based course that aims to encourage students to be knowledgeableandinquiringintothenatureoflanguage,natureofliteratureand the role of culture in both. The course introduces students to how language in special for humans, and how literature and culture make human beings caring. Thereisastrongemphasishereonencouragingstudentstodevelopintercultural understanding, open-mindedness, and the attitudes necessary for themto  respect and evaluate a range of points of view. |
| SEMESTER - IV | | | | |
| SEM 4 B.A. | CORE – 8 | British Literature: Early 20th Century | CO1 | This paper aims to familiarize the students with the new literature of Britain in the early decades of the 20th century. The course will mainly focus on the modernist canon, founded on Ezra Pound’s idea of ‘make it new’, but will cover war poetry, social poetry of the 1930s and literary criticism. |
| SEM 4 B.A. | CORE – 9 | European  Classical Literature | CO1 | The objective of this paper is to introduce the students to European Classical literature, commonly considered to have begun in the 8th century BC in ancient Greece and continued until the decline of the Roman Empire in the 5th century AD. The paper seeks to acquaint the students with the origins of the European  canon. |
| SEM 4 B.A. | CORE –10 | Women’s writing | CO1 | The course aims to acquaint the students with the complex and multifaceted literaturebywomenoftheworld,reflectingthediversityofwomen’sexperiences and their varied cultural moorings. It embraces different forms of literature: poetry,fiction,shortfiction,andcriticalwritings.Incertainrespects,itinterlocks  concerns of women’s literary history, women’s studies and feminist criticism. |
| SEM 4 B.A. | GE - 4 | Language and  Linguistics | CO1 | The objective of this paper is to make the students learn of the basics of  linguistics as well as language. |
| SEMESTER - V | | | | |
| SEM 5 B.A. | CORE –11 | Modern European  Drama | CO1 | Theaimofthispaperistointroducethestudentstothebestofexperimentaland  innovative dramatic literature of modern Europe. |
| SEM 5 B.A. | CORE –12 | Indian Classical  Literature | CO1 | Thispaperaimsatcreatingawarenessamongthestudentsoftherichanddiverse  literary culture of ancient India. |
| SEM 5 B.A. | DSC - 1 | Literary Theory | CO1 | The development of theory in the last half-century or more is a fact of critical importanceintheacademicstudyofliterature.Farfrombeingseenasaparasite on the text, theory has been seen as a discourse that provides the conceptual frameworkforliterature.Thispaperaimstogivethestudentsafirmgroundingin  a major methodological aspect of literary studies known as theory. |
| SEM 5 B.A. | DSC - 2 | Reading World Literature | CO1 | This paper proposes to introduce the students to the study of world literature througharepresentativeselectionoftextsfromaroundtheworld.Theideaisto read beyond the classic European canon by including defining literary textsfrom othermajorregions/countries—excepttheUnitedStatesofAmerica—writtenin languages other than English, but made available to the readers in English translation. |
| SEMESTER - VI | | | | |
| SEM 6 B.A. | CORE –13 | Postcolonial Literature | CO1 | This paper seeks to introduce the students to postcolonial literature—a body of literaturethatrespondstothediscoursesofEuropeancolonialismandempirein Asia,Africa,MiddleEast,thePacificandelsewhere.Byfocusingonrepresentative texts situated in a variety of locations, the paper aims to provide the students with the opportunity to think through and understand the layered response – compliance,resistance,mimicryandsubversion-thatcolonialpowerhas  provoked from the nations in their search for a literature of their own. |
| SEM 6 B.A. | CORE –14 | Popular Literature | CO1 | This paper seeks to introduce the students to genres such as romance,detective fiction,campusfiction,fantasy/mythology,whichhavea“mass”appeal,andcan helpusgainabetterunderstandingofthepopularrootsofliterature. |
| SEM 6 B.A. | DSC - 3 | Research Methodology | CO1 | Research methodology is a discipline specific course pitched at a higher level than the generic academic preparatory courses. Research is at the core of every universitycoursestartingfromtheUGtothePhDlevel.Thiscourseisdesignedto developthefundamentalsofresearchfromcreatingaquestioningmechanismin the students’ minds leading up to writing research papers and dissertations. Studentslearnthemethodologicalissuesimperativeforconductingresearchand for research documentation. The course also aims to train students inthe  essentials of academic and research writing skills. |
| Name of the Programme: B.A. Economics | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.A. | CORE - 1 | Introductory Micro Economics | CO1 | Exploring the subject matter of economics, markets and welfare. |
| CO2 | Theory of consumer choice. |
| CO3 | The Inputs market. |
| CO4 | The firm and market structures. |
| SEM 1 B.A. | CORE - 2 | Mathematical Methods for Economics | CO1 | Set and set operations. |
| CO2 | Relation, Function and Number system. |
| CO3 | Derivative of a function. |
| CO4 | Limit and continuity of function. |
| CO5 | Functions of two more independent variables. |
| CO6 | Matrices and determinant |
| SEMESTER - II | | | | |
| SEM 2 B.A. | CORE -3 | Introductory Macro Economics | CO1 | Basic concepts of Macro Economics |
| CO2 | Concepts and Methods of National income accounting. |
| CO3 | Measurement of Macro Economic variables |
| CO4 | Circular flow, National Income and Economic Welfare, and Green accounting. |
| CO5 | Money and changes its value. |
| CO6 | Determination of national income. |
|  |  |  | CO7 | Theory of determination of income and Employment. |
| SEM 2 B.A. | CORE -4 | Mathematical Methods for Economics-II | CO1 | Basic concepts and structure of input-output Model. |
| CO2 | Second and higher order derivatives and integration. |
| CO3 | Single and multivariable optimization. |
| CO4 | Optimization with equality constraints |
| CO5 | Lagrange multiplier method and border-Hessian determinants. |
| SEMESTER - III | | | | |
| SEM 3 B.A. | CORE – 5 | Micro Economics-I | CO1 | Concepts of consumer behavior like cardinal utility and ordinal utility analysis |
| CO2 | Theory of Indifference curve, Budget line and Consumer Equilibrium. |
| CO3 | Construction of Model, Optimization and Equilibrium. |
| CO4 | Income, price and substitution effects. |
| CO5 | Compensated demand curve, Consumer surplus and Producer Surplus. |
| CO6 | Production with one variable input |
| CO7 | CD, CES, Linear and Fixed Proportion Production Function |
| CO8 | Short run and long run cost functions |
| CO9 | Profit maximization of Competitive Firm. |
| SEM 3 B.A. | CORE – 6 | Micro Economics-I | CO1 | Consumption and investment |
| CO2 | Theories of Demand for Money: Classical, Neoclassical and Keynesian approach. |
| CO3 | Theories money supply determination and money multiplier. |
| CO4 | Analysis of Aggregate demand and Aggregate supply. |
| CO5 | IS-LM curve and their implication for equilibrium |
| SEM 3 B.A. | CORE – 7 | Statistical Methods for Economics | CO1 | Basic concepts of statistics, methods of data collection |
| CO2 | Presentation of data: Frequency distribution, Graph and Diagram |
| CO3 | Methods of central tendency and dispersion |
| CO4 | Measures of skewness and kurtosis |
| CO5 | Correlation analysis: Karl Pearson and Spearman Rank Correlation |
| CO6 | Regression Analysis: Two variable linear regression and standard error |
| CO7 | Time Series analysis: Component and Measurement |
| CO8 | Analysis of Index Number. |
| CO9 | Analysis of Probability and Random Variable |
| CO10 | Sampling method. |
| SEMESTER - IV | | | | |
| SEM 4 B.A. | CORE – 8 | Micro Economics-II | CO1 | Firms supply and Equilibrium |
| CO2 | General equilibrium, Efficiency and Welfare. |
| CO3 | Market imperfections: Monopoly and Oligopoly. |
| CO4 | Game Theory. |
| SEM 4 B.A. | CORE – 9 | MacroEconomics-II | CO1 | Modeling economic growth. |
| CO2 | Open Economy Macroeconomic policy |
| CO3 | Classical and Keynesian macroeconomics thought. |
| CO4 | Monetarist and New classical Macroeconomics thought |
| SEM 4 B.A. | CORE –10 | Research methodology | CO1 | Introduction to research: Meaning, objective, motivation and types |
| CO2 | Qualities of good researcher |
| CO3 | Selecting the research problem |
| CO4 | Research design: meaning, need and important concept relating to research  design. |
| CO5 | Measurement in research |
| CO6 | Research ethics: codes and ethics, permissions to research |
| CO7 | Literature review: research proposal, review of literature, abstracting and word  processing |
| CO8 | Report writing: words, sentences, paragraphs and writing style. |
| CO9 | The report: improving quality, sections, drawing conclusions and common  citation styles |
| SEMESTER - V | | | | |
|  |  |  | CO1 | Basic characteristics of Indian Economy as a developing Economy. |
| CO2 | The structure and organization of village and towns. |
| CO3 | Industries and Handicrafts in Pre-British India; Colonialism; Economic  Consequences of British Rule. |
| SEM 5 B.A. | CORE –11 | Indian economy-I | CO4 | The Land System and Commercialization of Agriculture; Industrial Transition;  Colonial Exploitation and Impacts |
| CO5 | Population Growth and Economic Development – size, growth and future of population; Causes of rapid population growth; Population and economic  development |
| CO6 | Population policy; Demographic issues – Sex and Age Composition of population;  Demographic Dividend. |
| CO7 | Human Resource Development – Indicators and importance of Human Resource  Development |
| CO8 | Trends in national and per capita income; Changes in sec total composition of  national income |
| CO9 | Regional disparities in Growth and Income; Savings and Investment |
| CO10 | Rationale, Features, Objectives, Strategies, Achievements and Assessment of  Planning in India |
| CO11 | Eleventh Five Year Plan – Objectives, Targets and Achievements; Twelfth Five  Year Plan – Vision and Strategy. |
| CO12 | Poverty, Inequality, Unemployment |
| SEM 5 B.A. | CORE –12 | Development economics- I | CO1 | Economic growth and economic development; characteristics of  underdeveloped countries |
| CO2 | Vicious cycle of poverty and cumulative causation; obstacles to economic  development; measures of economic development. |
| CO3 | National and per capita income, basic needs approach, capabilities approach. |
| CO4 | Three core values of development, PQLI, HDI, HPI, MDPI, GDI; capital formation  and economic development. |
| CO5 | Theories of Economic Growth and Development |
| CO6 | Concepts of poverty and inequality; measuring poverty; Measuring Inequality. |
| CO7 | Growth,povertyandinequality;Economiccharacteristicsofpovertygroups(rural poverty, women and poverty, indigenous population andpoverty). |
| CO8 | Roleofinstitutionsineconomicdevelopment;Characteristicsofgoodinstitutions  and quality of institutions. |
| CO9 | The role of democracy in economic development; Role of state; Role of markets  and market failure. |
| CO10 | Corruption and economic development – tackling the problem of corruption. |
| CO11 | Role of agriculture; transforming traditional agriculture; Barriers to agricultural  development |
| CO12 | Role of industrialization; Interdependence between agriculture and industries. |
| SEM 5 B.A. | DSE - 1 | Introductory econometrics | CO1 | Definition, nature and scope of econometrics |
| CO2 | Theoretical probability distribution. |
| CO3 | Hypothesis testing. |
| CO4 | Linear regression analysis |
| CO5 | Violation of classical assumptions |
| SEM 5 B.A. | DSE - 2 | Money, banking and financial market | CO1 | Definition and function of money. |
|  | CO2 | Commercial banking system in India. |
|  | CO3 | Central banking. |
|  | CO4 | Financial markets. |
| SEMESTER - VI | | | | |
|  |  |  | CO1 | Nature,importanceandtrendsinIndianagriculturalproductionandproductivity. |
| CO2 | Factors determining production, land reforms, new agricultural strategies and  green revolution. |
| CO3 | Rural credit; Agricultural marketing and warehousing. |
| CO4 | Trends in industrial output and productivities; Industrial Policies of 1948, 1956,  1977 and 1991. |
| CO5 | Industrial Licensing Policies – MRTP Act, FERA and FEMA. |
| SEM 6 B.A. | CORE –13 | Indian economy- II | CO6 | Growth and problems of SSI, Industrial sickness; Industrial finance; Industrial  labour. |
| CO7 | Tertiary Sector: growth and contribution of service sector to GDP of India. |
| CO8 | Share of services in employment; Human development – concept, evolution,  measurement, HRD. |
| CO9 | Indian educational policy; Health and Nutrition |
| CO10 | Foreign Trade, Trends of export and import in India, export promotion verses  import substitution. |
| CO11 | Balance of Payments of India; India’s Trade Policies; Foreign Capital – FDI, Aid  and MNCs. |
| SEM 6 B.A. | CORE – 14 | Development of economics -II | CO1 | Population and development. |
| CO2 | Dualism and economic development. |
| CO3 | Environment and economic development. |
| CO4 | International trade and economic development and financing economic  development |
| SEM 6 B.A. | DSC - 3 | International economics | CO1 | Importance of trade and trade theories. |
| CO2 | Trade policy and international economic institutions. |
| CO3 | Exchange rate. |
| CO4 | Balance of trade and payments |
| SEM 6 B.A. | DSC - 4 | PROJECT | CO1 | The objective of the project work for the students at undergraduate level is to exposestudentstothesocialandrealworldcontextinwhichthesubjecttaught in the class room have applications. A good research project requires sincere efforts and honest dedication fromstudents. |
| Name of the Programme: B.A. Political Science | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.A. | CORE - 1 | Understanding political theory | CO1 | This paper introduces political theory. Various approach to political theory such  as Normative and empirical. |
| CO2 | Student can learn about Feminism, modernism and post modernism. |
| CO3 | Topic is about Democracy and various theories such as liberal, Marxist,  procedural and substantive. |
| SEM 1 B.A. | CORE - 2 | Constitutional Government and Democracy in India | CO1 | The paper is about the philosophy of the constitution, the preamble and  the features of the constitution. |
| CO2 | It studies on Fundamental Rights and directive principle of state policy. |
| CO3 | It studies various organs of the Government such as Legislative, Executive  and Judiciary. |
| CO4 | It deals with the Power and function of President, Prime minister and the  Supreme Court. |
| CO5 | It deals with the Federalism, centre- state relation and recent trends in  federalism. |
| SEMESTER - II | | | | |
| SEM 2 B.A. | CORE -3 | Political theory – Concepts and Debates | CO1 | It highlights the importance of Freedom and kinds of liberty and types of  equality and Egalitarianism. |
| CO2 | It deals with Social exclusion and Affirmative action. |
| CO3 | This paper introduces Indispensability of justice. Such as procedural  justice, distributive justice and Global justice. |
| CO4 | Student can know about Universality of Rights. It includes Rights, Three generation of Human Rights and universal Declaration of Human Rights, Political obligation, cultural Relativism and Multiculturalism. |

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| SEM 2 B.A. | CORE -4 | Political Process in India | CO1 | The paper is about Indian party system. Its features and trends, voting  Behavior and its determinants. |
| CO2 | It deals with Election Commission and its function and electoral Reforms. |
| CO3 | It teaches Regionalism, religion and politics, secularism and communalism, Caste and politics, politicization of caste, Affirmative action. |
| CO4 | Student can know about the changing nature of the Indian State. Such as Developmental and welfare Dimension and Coercive dimension. |
| SEMESTER - III | | | | |
| SEM 3 B.A. | CORE – 5 | Introduction to comparative Governmentand Politics | CO1 | This paper introducer the basic concept and approaches to the study of  comparatives politics. |
| CO2 | It process on examining politics in a historical framework while engaging with various themes of comparative analysis in developed & developing  countries. |
| SEM 3 B.A. | CORE – 6 | Perspectives on Public Administration | CO1 | Student can learn the meaning, dimension and significance of Public  Administration, Public and private Administration and Evolution of Public Administration. |
| CO2 | This paper teaches about various theories of administration such as scientific management theory, Administrative Management theory and ideal type Bureaucracy, Neo classical theories such as Human Relation theory and rational decision –making theory and contemporary. |
| CO3 | It focuses on the concept, relevance and approaches, formulation,  implementation and evaluation of Public Policy. |
| CO4 | It focuses on New Public Administration, New Public management, New Public service Approach, Good Governance and Feminist perspectives. |
| SEM 3 B.A. | CORE – 7 | Perspective on International Relation | CO1 | This paper focuses on the study of interaction of the actors on  international politics including state and non-state actors. (Such as the united Nations, IMF, World Bank and Amnesty International.). |
| CO2 | It introduces some of the important theoretical approaches for studying  international relations. |
| CO3 | A key objective of the course is to make students aware of the implicit Euro-centricism of International Relations by highlighting certain specific  perspectives from the Global South |
| SEMESTER - IV | | | | |
| SEM 4 B.A. | CORE – 8 | Political Process and Institutionsin Comparative Perspective | CO1 | Political Culture & New institutionalism |
| CO2 | It focuses on definition, procedure and types of election system and  emergence of the party system and types of parties. |
| CO3 | It teaches about the Nation-state and historical evolution in Western  Europe and post colonial context Nation and state debate. |
| CO4 | It deals with democratization and federalism and the process of  Democratization in post- colonial, post-authoritarian and post-communist countries. |
| CO5 | Historical context of Federation and confederation: debate around  territorial division of power. |
| SEM 4 B.A. | CORE – 9 | Public Policyand Administrationin India | CO1 | This paper introduces public policy and administration in India. |
| CO2 | It deals with issues of decentralization, financial management, citizens and administration and social welfare from a non- western perspective. |
| CO3 | It also describer various social welfare policies: Education, Health, food  and Employment |
|  |  |  | CO1 | This paper introduces students the meaning & nature of globalization. |
| SEM 4 B.A. | CORE –10 | Global Politics | CO2 | It imparts an understanding of the working of the world economy, its  anchors & resistances offered by global social movements. |
| CO3 | It also offers insight into key contemporary global issues such as the  proliferation of nuclear weapons, ecological issues, international terrorism and human security. |
| SEMESTER - V | | | | |
| SEM 5 B.A. | CORE –11 | Classical Political Philosophy | CO1 | This paper offers and inside over the works and Philosophy of Plato,  Aristotle, Machiavelli. |
| CO2 | It imparts an understanding about human nature, state of nature and  social contract of Hobbes & Locke. |
| SEM 5 B.A. | CORE –12 | Indian Political  Thought – 1 | CO1 | This paper offers an insight into the tradition of Pre- colonial Indian  Political Thought. It includes a study about Brahmanic and Shramanic, Islamic and Syncretic ideology. |
| CO2 | It studies about social laws of Manu and theory of state of Kautilya. |
| CO3 | It focuses on theory of Kingship of Aggannasutta and ideal polity of Barani. |
| CO4 | It teaches about Monarchy of Abul Fazal and Syncretism of Kabir. |
| SEM 5 B.A. | DSE - 1 | Human Rights in a Comparative Perspective | CO1 | It emphasizes on institutionalization and understanding of Human Rights, three generation of Human Rights and institutionalization of Universal  Declaration of Human Rights. |
| CO2 | This paper studies rights in National Constitution of South Africa and India. |
| SEM 5 B.A. | DSE - 2 | Development Process andSocial Movement in Contemporary India | CO1 | This paper introduces students the development processes since and  dependence and different types of social movements in contemporary India. |
| CO2 | This paper studies the influence of globalization, development processes  in India. |
| SEMESTER - VI | | | | |
| SEM 6 B.A. | CORE –13 | Modern Political Philosophy | CO1 | The paper is about the Modernity and its discourses. |
| CO2 | This paper deals with the work and Philosophy of Jean Jacques Rousseau. His  concept of General wills local or direct democracy, self government and origin of inequality |
| CO3 | It focuses works and philosophy of Mary Wollstone Craft. Her concept about Women and paternalism, critique of Rousseau’s idea of education, and legal  rights. |
| CO4 | 4. It covers the work and philosophy of John Stuart Mill. His concept of liberty, suffrage and subjugation of women, right of minorities and utility principle, and the concept about Dialectical Materialism, Historical Materialism, Alienation, Class struggle and surplus value of Karl Marx. |
| SEM 6 B.A. | CORE – 14 | Indian Political Thought | CO1 | It focuses on Modern Indian Political Thought such as Rajarammohan Roy, Pandita Rambai, Vivekananda , Gandhi, BR Amedkar and Nationalism of Tagore, Jaya Prakash Narayan, Savarkar, Nehru and Lohia. |
| SEM 6 B.A. | DSC - 3 | India’s Foreign Policy in a globalizing World | CO1 | This paper is written to enrich the knowledge of the students in the  evolution and practice of India’s foreign Policy. |
| CO2 | It highlights integral linkages between the domestic and the international  aspects of India’s policy. |
| CO3 | It disuses India’s evolving relation with the Superpower (USA, USSR &  China) before its independence and after Independence. |
| SEM 6 B.A. | DSC - 4 | Women, power and politics | CO1 | The paper is about patriarchy: Sex- Gender Debates, Feminism, Family, Community, State, and History of the women’s Movement in India. Movement and issues, such as violence against Women, Visible and  invisible work , Reproductive and care work & Sex work. |
| Name of the Programme: B.A. Education | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.A. | CORE - 1 | EDUCATIONAL PHILOSOPHY | CO1 | State and analyze the meaning of education and aims of education. |
| CO2 | Describe the essence of different formal philosophies and draw educational  implications. |
| CO3 | Compare and contrast Indian and western philosophies of education. |
| SEM 1 B.A. | CORE - 2 | EDUCATIONAL PSYCHOLOGY | CO1 | Explain the concept of educational psychology and its relationship with  psychology. |
| CO2 | Understand different methods of educational psychology. |
| CO3 | Describe the theoretical perspectives of educational psychology. |
| CO4 | Identifythelearningneedsduringthedifferentstagesofdevelopmentandadopt appropriatestrategiesinandoutofschooltomeetthelearningneeds. |
| SEMESTER - II | | | | |
| SEM 2 B.A. | CORE -3 | EDUCATIONAL SOCIOLOGY | CO1 | State the relationship between education and society. |
| CO2 | Understand the meaning of Educational Sociology and function of education as a  social system. |
| CO3 | Justify the importance of education for social change. |
| CO4 | Describe the role of education in modernization and globalization. |
| SEM 2 B.A. | CORE -4 | CHANGING PEDAGOGICAL PERSPECTIVE | CO1 | Explain the concept of pedagogy. |
| CO2 | Explain different teaching task with example. |
| CO3 | Establish relationship between teaching and learning. |
| CO4 | List out different approaches and methods of teaching. |
| CO5 | Prepare a lesson plan following different designs. |
| SEMESTER - III | | | | |
| SEM 3 B.A. | CORE – 5 | EDUCATIONAL ASSESSMENTAND EVALUATION | CO1 | State the nature, purpose and types of educational assessment and evaluation. |
| CO2 | Develop and use different types of tools and techniques for continuous and comprehensive assessment of learning in the school situation. |
| CO3 | Explain the importance of assessment for learning and its processes for  enhancing the quality of learning and teaching. |
| CO4 | Describe the characteristic of a good test. |
| SEM 3 B.A. | CORE – 6 | EDUCATIONAL RESEARCH | CO1 | Describe nature, scope and limitation of educational research. |
| CO2 | Understand different types and methods of educational research. |
| CO3 | Explain sources from where knowledge could be obtained. |
| CO4 | Analyze research design in education. |
| CO5 | Prepare the research report. |
| SEM 3 B.A. | CORE – 7 | STATISTICS IN EDUCATION | CO1 | Describe the importance of statistics in education. |
| CO2 | Organise and represent educational data in tabular and graphical form. |
| CO3 | Compute and use various statistical measures. |
| CO4 | Describe the concept and importance of normal probability curve and interpret  test scores in using normal probability curve |
| SEMESTER - IV | | | | |
| SEM 4 B.A. | CORE – 8 | HISTORY OF EDUCATIONIN INDIA | CO1 | Understand the development of education in India during ancient period, medieval, pre-independence period and post-independence period. |
| CO2 | Describe major recommendations of different policies and committee reports on  education in India. |
|  |  |  | CO1 | Differentiate curriculum from courses of study, text book. |
| SEM 4 B.A. | CORE – 9 | CURRICULUM DEVELOPMENT | CO2 | Analyse bases and sources of curriculum. |
| CO3 | Describe different types of curriculum. |
| CO4 | Critically examine National curriculum framework- 2000 and 2005. |
| CO5 | Describe process of curriculum development and differentiate different models  of curriculum development. |
| SEM 4 B.A. | CORE – 10 | GUIDANCE AND COUNSELLING | CO1 | State the concept, need, principles and bases of guidance. |
| CO2 | Use various tools and techniques of guidance in appropriate contexts. |
| CO3 | Explain the role of school in organizing different guidance programmes. |
| CO4 | State the concept, scope and type of counselling. |
| CO5 | Narrate the process, tools and techniques of counselling. |
| CO6 | Explain the qualities and role of a counsellor. |
| SEMESTER - V | | | | |
| SEM 5 B.A. | CORE – 11 | DEVELOPMENT OF EDUCATIONIN ODISHA | CO1 | Grasp the structure of educational system of Odisha. |
| CO2 | State the function of institutions/units at the state and district levels . |
| CO3 | Know the schemes of central as well as state government being implemented in  the state of Odisha. |
| CO4 | Explain the role of various state and district level institutions in education. |
| CO5 | Analyze the scenario of higher and technical education of Odisha. |
| SEM 5 B.A. | CORE – 12 | INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION | CO1 | Explain the concept, nature and scope of ICT in education. |
| CO2 | Explore ICT resources for Teaching and learning. |
| CO3 | Differentiate between Web1.0 and Web2.0. |
| CO4 | Describe the importance of free and open-source software in education. |
| CO5 | Demonstrate the use of various application software in education. |
| CO6 | Develop the ability to use various tools connect the world. |
| SEM 5 B.A. | DSE - 1 | PEDAGOGY OF LANGUAGE  (English & Odia) | CO1 | AnalyzetheissuesrelatingtoplaceofEnglishinschoolcurriculum,acquisitionof skills in English, realization of aims and Learning Objectives of learning English and language policy as conceived in NPE, 1986 and NCF –2005. |
| CO2 | Use various methods, approaches and strategies for teaching-learning English  andtransactvarioustypesoflessonplanscoveringallaspectsofEnglishlanguage following differentapproaches. |
| CO3 | Develop test items to assess learning in English and provide feedback as well as  prepare enrichment materials. |
| CO4 | State the importance and place of Odia as mother tongue in school curriculum. |
| CO5 | Develop the strategies to address the problems of Odia language acquisition in  multilingual context. |
| CO6 | Use various strategies for facilitating the acquisition of language skills in Odia. |
| CO7 | Prepare appropriate tools for comprehensive assessment of learning in Odia. |
| CO8 | Explain the fundamentals of Odia linguistics and their relevance in teaching  learning Odia |
| SEM 5 B.A. | DSE - 2 | PEDAGOGY OF SOCIALSCIENCES  / PEDAGOGY OF MATHEMATICS | CO1 | State the meaning, scope and importance of Social science. |
| CO2 | Specify the skills and competencies to formulate specific learning objectives for  different History and Political Science lessons. |
| CO3 | Identify the different methods and skills of teaching History and Political Science  for transacting the contents effectively. |
| CO4 | Explain the importance of time sense and prepare / utilize timelines for effecting  teaching of History. |
| CO5 | Prepare Unit Plans and Lesson Plans in History and Political science. |
| CO6 | Narrate the evolution and nature of Mathematics and its importance in the  school curriculum in the context of the recent curricular reforms. |
| CO7 | Use various methods and approaches of teaching and learning mathematics  especially suitable for the secondary school classes. |
| CO8 | Plan lessons in Mathematics using traditional and constructivist approaches for  effective classroom transactions. |
|  |  |  | CO9 | Develop and collect activities and resource materials for their use in enhancing  the quality of learning Mathematics at the secondary level. |
| SEMESTER - VI | | | | |
| SEM 6 B.A. | CORE –13 | CONTEMPORARY TRENDS AND ISSUES IN INDIAN EDUCATION | CO1 | Understand the importance of pre-school and elementary school education and analyze various problems and issues for ensuring quality education. |
| CO2 | State the importance of secondary education and analyze various problems and  issues for ensuring quality in secondary education. |
| CO3 | Enumeratetheimportanceofhighereducationandanalyzevariousproblemsand  issues for ensuring quality in higher education. |
| CO4 | Justify the importance of teacher education and analyze various problems and  issues for ensuring quality in teacher education. |
| SEM 6 B.A. | CORE – 14 | EDUCATIONAL MANAGEMENT AND LEADERSHIP | CO1 | Describe the concept, types and importance of educational management. |
| CO2 | Spell out the structure of educational management at different levels - from  national to institution level. |
| CO3 | Describe different aspects and importance of educational management. |
| CO4 | Describe the concept, theories and style of leadership in educational  management. |
| CO5 | Analyze the concept, principles and structures of total quality management  approach in education. |
| SEM 6 B.A. | DSC - 3 | POLICY AND PRACTICES IN SCHOOL EDUCATION, HIGHER EDUCATION & INCLUSIVE EDUCATION IN INDIA | CO1 | Analyse various policies on education for school education in India. |
| CO2 | Evaluate progress of school education. |
| CO3 | Examine the problems in implementation of the policies on school education. |
| CO4 | Explore status of women education and education for SC, ST and Minorities in  Indian. |
| CO5 | Analyse various policies on education for Higher education in India. |
| CO6 | Evaluate progress of Higher education. |
| CO7 | Examine the problems in implementation of the policies on higher education. |
| CO8 | Explore status of higher education. |
| CO9 | Analyse role of various agencies of higher education in India. |
| CO10 | Define meaning and scope of inclusive education. |
| CO11 | Identify the assumptions of disability underlying current general and special  education practices |
| CO12 | Understand the various suggestions given by different recent commissions on education of children with disabilities for realizing the concept of  “Universalization of Education”; |
| SEM 6 B.A. | DSC - 4 | DISSERTATION /  RESEARCH PROJECT | CO1 | Learn and practice the literature survey aspects of projects. |
| CO2 | To design and execute projects. |
| CO3 | Write the research report. |
| Name of the Programme: B.A. History | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.A. | CORE - 1 | HISTORY OF INDIA- I | CO1 | Basic concept on the reconstructing Ancient Indian History. |
| CO2 | ToknowaboutHuntergatherersandfoodproductioninpre-historicperiod. |
| CO3 | To analyze the Importance of the Harp pan civilization. |
| CO4 | Develop Knowledge about cultures in transition of Ancient India. |
| CO5 | Develop the knowledge on Vedic age: society, polity, economy and culture  etc. |
|  |  |  | CO1 | Basic concept on Evolution of Humankind. |
| CO2 | Basic Information about the Paleolithic, Mesolithic and Neolithic cultures of  the Ancient world. |
| SEM 1 B.A. | CORE - 2 | SOCIAL FORMATIONAND CULTURAL PATTERNS OF ANCIENTWORLD | CO3 | Provides knowledge on the evolution of agriculture and food production. |
| CO4 | Provides knowledge about Bronze Age civilization: Egypt and Mesopotamia. |
| CO5 | How, “European Civilization developed in the body of Greek Society, like a  child in the womb.” |
| CO6 | Provides Information about the contribution of ancient Greeks to human  civilization. |
| CO7 | Helps students for going knowledge on origin of Democracy in world by  Greeks. |
| SEMESTER - II | | | | |
| SEM 2 B.A. | CORE -3 | HISTOTY OF INDIA- II (300 BCE -750 CE) | CO1 | To know the expansion of agrarian economy and the production relations in  the post Vedic society. |
| CO2 | Provides knowledge about the administrative system of the Maura period. |
| CO3 | To explain the different forms and patterns of urban centers developed in  early medieval urban settlement of India. |
| CO4 | Provides knowledge about the consolidation of the Brahman cal Tradition. |
| SEM 2 B.A. | CORE -4 | SOCIAL FORMATION AND CULTURAL PATTERNS OF MEDIEVALWORLD | CO1 | Provides knowledge on Polity and economy in Ancient Rome. |
| CO2 | To know about the Economic developments in Europe from 7th to14th  centuries. |
| CO3 | To develop skill on Religion and culture in medieval Europe. |
| CO4 | Provides information about the system of Societies in central Islamic lands. |
| CO5 | It helps students to get idea about the history of Ancient Rome. |
| CO6 | It helps to know about the origin of republican form of Government. |
| SEMESTER - III | | | | |
| SEM 3 B.A. | CORE – 5 | HISTORY OF INDIA- 111 (C 750- 1206) | CO1 | Basic knowledge on early medieval India. |
| CO2 | Political Structures during the early medieval period. |
| CO3 | About Agrarian structure and Social change. |
| CO4 | Informs about the methods of Trade and commerce during the period. |
| CO5 | Create ideas on Religious and cultural developments in those period. |
| SEM 3 B.A. | CORE – 6 | RISE OF MODERN WEST -1 | CO1 | To know about the period of transition from feudalism to capitalism. |
| CO2 | Provides information about the early colonial expansion. |
| CO3 | Provides knowledge about the period of Renaissance or Revival. |
| CO4 | Provides knowledge about the period of reformation. |
| CO5 | Imbibes to know about economic development of the 16th century |
| SEM 3 B.A. | CORE – 7 | HISTORY OF INDIA- IV (1206-1526) | CO1 | Interpreting the sources of Delhi Sultanate. |
| CO2 | The political structures of the Sultanate Period. |
| CO3 | The emergence of Regional Identities. |
| CO4 | Society and Economy during the Sultanate Period. |
| CO5 | Religion, Society and culture in time of the Sultanate regime. |
| SEMESTER - IV | | | | |
| SEM 4 B.A. | CORE – 8 | RISE OF THE  MODERN WEST –II | CO1 | European crisis in the 17th century on economic, social and political  dimensions. |
| CO2 | The British Revolution and European politics in the 18th century. |
| CO3 | Development of Science from Renaissance to the 17th century. |
| CO4 | Mercantilism and its impact on European economy. |
| CO5 | The American war of independence, 1776 and its significance. |
| SEM 4 B.A. | CORE – 9 | HISTORY OF INDIA  –V (1526-1750) | CO1 | The sources and Historiography of India during the mentioned period. |
| CO2 | The establishment of Mughal Rule In India. |
| CO3 | The consolidation of Mughal Rule in India. |
| CO4 | Knowledge about the Cultural Ideals of the Mughal regime. |
| CO5 | Society and Economy system during the Mughals. |
|  |  |  | CO1 | Provides Basic Concept on meaning and scope of History. |
| SEM 4 B.A. | CORE – 10 | HISTORICAL THEORIES AND METHODS | CO2 | Imbibes to know the Historical writings of traditions. |
| CO3 | Proves History as inter disciplinary practice. |
| CO4 | The concept of Modern theories. |
| CO5 | To acquire knowledge about the Historical Methods. |
| SEMESTER - V | | | | |
| SEM 5 B.A. | CORE – 11 | HISTORY OF MODERN EUROPE- 1 (1789-1939) | CO1 | The causes and effects of the French Revolution. |
| CO2 | The Revolution and its European Repercussion. |
| CO3 | The Restoration and Revolution during the period (1815-1848) 4. The  capitalistIndustrializationandSocioeconomictransformationduringthelate 18th century to1914AD. |
| CO4 | The varieties of Nationalism and the Remaking of States in the 19thand 20th  centuries. |
| SEM 5 B.A. | CORE – 12 | HISTORY OF INDIA- VII (1750-1857) | CO1 | To throw light on Society, economy and polity of mid 18thcentury India. |
| CO2 | To know about the expansion and consolidation of the colonial powers. |
| CO3 | To analyze the Ideologies of the colonial states. |
| CO4 | ToknowaboutsocietyandeconomicstatusofthepeopleofIndiain18thand  19th century. |
| CO5 | Provides knowledge about the causes and consequences of the popular  resistance in India. |
| SEM 5 B.A. | DSE - 1 | HISTORY OF THE UNITED STATES OF AMERICA | CO1 | ToknowaboutthesettlementandcolonizationbytheEuropeansinAmerica. |
| CO2 | To throw light on the causes and consequences of the American war of  Independence. |
| CO3 | To drive knowledge regarding the evolution of American Democracy. |
| CO4 | Throw light on the beginning of Industrialization in America. |
| CO5 | TOprovideknowledgeaboutslavesocietyandcultureoftheUnitedStatesof  America. |
| SEM 5 B.A. | DSE - 2 | HISTORY AND CULTURE OF ODISHA | CO1 | To know about the Socio- political life of early and medieval Odisha. |
| CO2 | Provide knowledge about Religion, Art and Literature of early and medieval  Odisha> |
| CO3 | Knowledge about political and economic structure in medieval Odisha. |
| CO4 | To know about colonialism in Odisha. |
| CO5 | To know regarding the Socio- Cultural changes in Modern Odisha |
| SEMESTER - VI | | | | |
| SEM 6 B.A. | CORE – 13 | HISTORY OF INDIA—V111 (1857-1950) | CO1 | To know about the cultural changes and Social and Religious Reformation  Movement in India. |
| CO2 | To know the trends of Nationalism in India up to 1919. |
| CO3 | Provides knowledge about Gandhi an Nationalism after 1919. |
| CO4 | To know communalism and partition in India. |
| CO5 | Provides knowledge regarding the emergence of new State in India. |
| SEM 6 B.A. | CORE – 14 | HISTORY OF MODERN EUROPE—II | CO1 | To provide information about Liberal Democracy, Working class Movements  and Socialism in Europe in the 19th and 20th centuries. |
| CO2 | To know about the crisis of feudalism in Russia. |
| CO3 | To get Information about the Rule of the Imperialists and war and crisis  during the period (1889—1939) |
| CO4 | To gain knowledge on cultural transformation in Europe since 1850. |
| CO5 | To get ideas about the Intellectual Developments in Europe since 1850 |
| SEM 6 B.A. | DSC - 3 | H-ISTORY OF THE UNITED STATES OF AMERICA—II | CO1 | To know about the political changes and economic transformation in America in  19th and 20th centuries |
| CO2 | Information about Reformation period in America. |
| CO3 | To make knowledge regarding the Rise of Imperialism in America. |
| CO4 | Drive knowledge on the Afro-American Movements and Intellectual  Movements in U.S.A. |
| SEM 6 B.A. | DSC - 4 | PROJECT PAPER | CO1 | To select the topic for the preparation of the project paper. |
| CO2 | Students should be careful to review the Literature of the topic while  preparing the project paper. |
| CO3 | To prepare project report and preparation and present it using PowerPoint  presentation. |
| CO4 | Work within a small team to achieve a common research goal. |
| Name of the Programme: B.A. Sociology | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.A. | CORE - 1 | INTRODUCTION TO SOCIOLOGY - I | CO1 | Thispaperisexpectedtobroadenthestudent’sknowledgeaboutthesubject-  its basic concepts and some universal processes. |
| SEM 1 B.A. | CORE - 2 | INTRODUCTION TO SOCIOLOGY - II | CO1 | Thispaperisexpectedtobroadenthestudent’sknowledgeaboutthesubject-  itsbasicconceptsandsomeuniversalprocessesandgivemoreknowledge about individual andsociety. |
| SEMESTER - II | | | | |
| SEM 2 B.A. | CORE -3 | INDIAN SOCIETY | CO1 | To give better understanding of Indian society |
| CO2 | To examine the relevance of various Social Institutions in present day society. |
| CO3 | To make the students understand the importance of these institutions in the Integration  of society. |
| CO4 | It presents a comprehensive integrated and empirically based profile of Indian society. |
| SEM 2 B.A. | CORE -4 | SOCIOLOGY OF ENVIRNOMENT | CO1 | Thispaperaimstofamiliarizethestudentwiththeconceptsofenvironment, therelationofindividualwithsociety&changesoccursduetoenvironment. |
| SEMESTER - III | | | | |
| SEM 3 B.A. | CORE – 5 | CLASSICAL SOCIOLOGICAL THINKERS | CO1 | This paper is about the contribution of various classical sociologists to the fieid of  sociology. |
| CO2 | lt will help the students to know about their theoretical und methodological perspective  to society. |
| SEM 3 B.A. | CORE – 6 | SOCIALCHANGE  AND DEVELOPMENT | CO1 | Thispaperisexpectedtoprovideknowledgeaboutsocialchangeandvarious factors and processes socialchange. |
| SEM 3 B.A. | CORE – 7 | SOCIOLOGY OF GENDER | CO1 | The paper aims to introduce various concepts regarding gender. |
| CO2 | It includes clarification of ideas about the social construction of gender. |
| CO3 | It is expected to give guidance for creating a society based on gender equality. |
| SEMESTER - IV | | | | |
| SEM 4 B.A. | CORE – 8 | RURAL SOCIOLOGY | CO1 | This paper will help the students to know social behavior, institutions,  culture,politicalorganizationsandlivingpatternofvillages.2.Studentscan differentiatebetweentheruralandurbanandvariousproblemsattachedto it. |
| SEM 4 B.A. | CORE – 9 | GLOBALIZATION AND SOCIETY | CO1 | This paper is expected to acquaint the students about the process of globalization and its  various dimensions |
| CO2 | Relate them to various changes brought by it. |
| SEM 4 B.A. | CORE – 10 | MARRIAGE, FAMILY AND  KINSHIP | CO1 | Thepaperisexpectedtoprovideknowledgeaboutvarioussocialinstitutions, its importance in contemporarysociety. |
| SEMESTER - V | | | | |
| SEM 5 B.A. | CORE – 11 | RESEARCH METHODOLOGY | CO1 | This paper is designed to acquaint the students with the scientific ways of  studying the social phenomena. It will help the students to know the methodological processes in conducting research. |
| SEM 5 B.A. | CORE – 12 | SOCIAL MOVEMENTSIN  INDIA | CO1 | The paper aims at developing ideas about the collective behavior in social  movement.Thestudentwillgettoknowhowchangesoccurdueto movements. |
| SEM 5 B.A. | DSE - 1 | SOCIOLOGY OF  HEALTH | CO1 | This paper gives a socio cultural insight into various health problems and to  understand the health sector reforms. |
| SEM 5 B.A. | DSE - 2 | SOCIOLOGY OF EDUCATION | CO1 | This paper provides knowledge about the meaning and theoretical  perspectives on Sociology of education. It makes the students familiar with relationship between education and society. |
| SEMESTER - VI | | | | |
| SEM 6 B.A. | CORE – 13 | POPULATION AND SOCIETY | CO1 | Throughthispaperastudentwillgetinformationaboutvariousconcept  regarding population studies, determinants of population growth, itssocial  consequences and mechanisms to control it. |
| SEM 6 B.A. | CORE – 14 | SOCIAL DISORGANISATJO  N AND  DEVIANCE | CO1 | The paper aims to introduce the students about various concepts of social disorganization-its causes and consequences, deviant theories, criminal activities etc. |
| SEM 6 B.A. | DSC - 3 | URBAN  SOCIOLOGY | CO1 | The paper will provide some insights regarding the urban way of life-its  institutions, social behavior within it, problems & development. |
| SEM 6 B.A. | DSC - 4 | FIELD WORK AND DISSERTATION | CO1 | Theprojectmaybeprimaryandsecondarydatabasedormayinvolvesurvey work/fieldwork. |
| Name of the Programme: B.A. Philosophy | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.A. | CORE - 1 | General Philosophy | CO1 | ThecourseisdesignedtoexposethestudentstothegeneralPhilosophy whichisexplainedthebasicconceptandproblemsofPhilosophy. |
| SEM 1 B.A. | CORE - 2 | Logic & Scientific Method | CO1 | Thestudentabletolearnthedifferentscientificmethodwhichhelpsthemto  predicatedifferentlogicalconsequencesandcarryingoutexperimentand observations based in thosepredictions. |
| SEMESTER - II | | | | |
| SEM 2 B.A. | CORE -3 | Systems of Indian Philosophy | CO1 | This course is concerned with the different views of traditional Indian philosophical school. It is concerned with the orthodox and heterodox school, the theory of causation, liberation, law of korma, epistemology, metaphysics and soul theory. |
| SEM 2 B.A. | CORE -4 | Symbolic Logic and Logic of scientificEnquiry | CO1 | Thecourseprovidesthelogicalprinciplestomakeproperarguments.These differentscientificmethodsandproceduresareincludesinthiscourse. |
| SEMESTER - III | | | | |
| SEM 3 B.A. | CORE – 5 | Ethics | CO1 | The course will nurture the systematic understanding of the basic Indian ethics whose  insights have influenced thinkers in early Greece, Europe and Asia. The Chapters teaches the students above orthodox and heterodox debates, from early classical Hindu texts to Buddhist, Jaina,Yoga and Gandhian ethics. |
| SEM 3 B.A. | CORE – 6 | Greek Philosophy | CO1 | The objective of this course is to provide the origin and development of the  PhilosophyontheGreeksphere.ThePre-socretic,PlatonicandAristotelian conception of epistemology, ethics, causation, theory of ideas, theory of forms and matters. It helps to allconcerned. |
| SEM 3 B.A. | CORE – 7 | Systems of Indian Philosophy -II | CO1 | The course is designed to acquaint the students regarding the traditional concept of Brahman, Liberation, God, Maya, Jiva & Iswar. |
| SEMESTER - IV | | | | |
| SEM 4 B.A. | CORE – 8 | Contemporary Indian Philosophy | CO1 | ThiscourseisemphasizingonthemodernIndianphilosophicalconcepts.The  advantagesof thiscoursearethatwhichprovidestheconceptofGod, man, nature of world Religion, realityetc. |
| SEM 4 B.A. | CORE – 9 | Modern European Philosophy | CO1 | This course introduces some basic concept of the Western Philosophy. This is emphasizing on the theory of substance, the source of knowledge reconciliation between empiricism and rationalism, space and Time and etc. |
| SEM 4 B.A. | CORE – 10 | Philosophy and Language | CO1 | The objective of this course is that it helps to improve the understanding of thewordmeaningandsentencemeaning.Thiscourseprovidestheconcepts truth,analytic-synthetic,aprioriandaposterioridifference. |
| SEMESTER - V | | | | |
| SEM 5 B.A. | CORE – 11 | Descartes Meditation 1st  Philosophy | CO1 | Meditation on First Philosophy in which the existence of God and the immortality of the soul are demonstrated. |
| SEM 5 B.A. | CORE – 12 | Philosophy of  Upanishads | CO1 | ThiscourseisbasedonthetenUpanishads.Thiscoursewillhelpthestudents  to know how to give commentary on the verses. |
| SEM 5 B.A. | DSE - 1 | The Philosophy of Bhagavad Gita | CO1 | ThecourseconsideredtobethedoctrineofUniversaltruth,BagavadGitahas  longbeeninfluencingandteachesvariousimportantprinciplesthatrelateto work, life, religion,Philosophy. |
| SEM 5 B.A. | DSE - 2 | Philosophy of Religion | CO1 | Religious philosophy is philosophical thinking that is influenced and directed  as a consequence of teachings from a particular religion, philosophy of religious is predominantly concerned with the conception of God and other divine. |
| SEMESTER - VI | | | | |
| SEM 6 B.A. | CORE – 13 | Social and Political  Philosophy | CO1 | It is the area of philosophy as on interdisciplinary programme that explores  contemporary issues and events of global importance from different perspectives. |
| SEM 6 B.A. | CORE – 14 | Applied Ethics | CO1 | Ethics introduces ethical principles and concepts which will develops moral thinking. It also provides the relation between ethics and other social sciences. It also discusses various punishment theories to students. Applied Ethics is also most important for students, the objective of the course is the application of ethical rules and principles which can apply for well being of the society. This course designed for the theory of animal rights, abortion, ecology, doctor-patient relationship, business ethics and etc. |
| SEM 6 B.A. | DSC - 3 | Gandhian Study | CO1 | Thiscoursepreparesthestudentsabouttheconceptsofpeaceandnon-violence. |

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| **Name of the Programme: B.Sc. Botany** | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.Sc. | CORE - 1 | Microbiology and phycology | CO1 | Microbial world, microbial nutrition, growth and metabolism with practical. |
| CO2 | Virology and immunology with practical. |
| CO3 | Bacteria and cyanobacteria and their economic importance. |
| CO4 | Evolutionary significance of prochloron. |
| CO5 | Different types of algae with their ecology and evolution and their role in  environment, agriculture, biotechnology and industry. |
| SEM 1 B.Sc. | CORE - 2 | Biomolecules and Cell Biology | CO1 | Water, ph, buffer, chemical bonds and structure and function of different biomolecules including proteins, lipids, nucleic acids, and carbohydrates. |
| CO2 | Basic concepts of enzymes and their mechanism of action. |
| CO3 | Acquire knowledge base of metabolic pathways occurring inside living cells. |
| CO4 | Thisintroductorysectionaimstogivethestudentanoverviewofbasiccellbiology includingcellstructure,typesanditsapplicationinandaroundtheworkplace. |
| CO5 | Key components that constitute living cells, dynamic attributes of cell including cell interaction, cell adhesion and cellular signaling.Structure of DNA and RNA and their role in living body. |
| CO6 | Biological roles of protein. |
| CO7 | Structure and function of lipid. |
| CO8 | Significance of cell cycle and cell division. |
| CO9 | Importance of Biomolecules in living tissue. |
| SEMESTER - II | | | | |
| SEM 2 B.Sc. | CORE -3 | Mycology and Phytopathology | CO1 | The students will study different types of fungi along with their affinities  with plants. |
| CO2 | They will study their classification along with ecology and classifications. |
| CO3 | Role of fungi in biotechnology and mushroom cultivation. |
| CO4 | Application of fungi in food industry in pharmaceutical preparations and in  biological control. |
| CO5 | Geographical distribution of diseases and host- pathogen relationship. |
| CO6 | Prevention and control of plant diseases. |
| CO7 | Quarantine practices. |
| SEM 2 B.Sc. | CORE -4 | Archegoniates | CO1 | Unifying features of archegoniates. |
| CO2 | Origin of land plants and adaptation to land habit. |
| CO3 | Range of thallus organization, ecology and economic importance of bryophytes. |
| CO4 | Classifications, evolution, stellar evolution and economic importance of  pterophytes and gymnosperms. |
| CO5 | Geological time scale, fossils and fossilization process. |
| SEMESTER - III | | | | |
| SEM 3 B.Sc. | CORE – 5 | Anatomy of Angiosperms | CO1 | Scopeofplantanatomy,applicationsinsystematic,forensicsandpharmacognosy. |
| CO2 | Idea on tissue and cyto differentiation of tracheary elements. |
| CO3 | Organization of root, shoot and stem apices. |
| CO4 | Seasonal activity of cambium. |
| CO5 | Normal and anomalous secondary growth. |
| CO6 | Adaptive and protective tissue systems and also secretory tissue system. |
| CO7 | Anatomical adaptations of xerophytes and hydrophytes. |
| SEM 3 B.Sc. | CORE – 6 | Economic Botany | CO1 | Centersoforigin,domestications,lossofgeneticdiversity,evolutionofnewcrops/  varieties and importance of germplasm activity. |
| CO2 | Economic importance of cereals, legumes, sugars and starches, spices. |
| CO3 | Therapeutic and habit-forming drugs. |
| CO4 | Uses and health hazards of tobacco. |
| CO5 | Classification, extraction, uses and health implications of oil-bearing seeds. |
| CO6 | Rubber, timber and fibre yielding plants and their uses and extraction. |

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| SEM 3 B.Sc. | CORE – 7 | Genetics | CO1 | Describing gene linkage sex influence and linkage. |
| CO2 | Explaining genetic anomalies caused by changes in chromosome number. |
| CO3 | Summarizing genetic anomalies caused by changes in chromosome structure. |
| CO4 | Describing genetic deviations from mendelian principles of genetic analysis. |
| CO5 | Differentiating between essential genes and both dominant and recessive lethal  alleles. |
| CO6 | Explaining the environmental influences on gene expression. |
| CO7 | Listing examples of non-mendelian inheritance. |
| CO8 | Basic principles of Mendalian Inheritance. |
| SEMESTER - IV | | | | |
| SEM 4 B.Sc. | CORE – 8 | Molecular Biology | CO1 | Biochemical nature of nucleic acids. |
| CO2 | The process and models of DNA replication and the involvement of enzymes. |
| CO3 | Deciphering and salient features of genetic code. |
| CO4 | Processing and modification of RNA. |
| CO5 | Mechanism of transcription and its regulation. |
| CO6 | The process of transcription and various steps of protein synthesis. |
| SEM 4 B.Sc. | CORE – 9 | Plant Ecology and Phytogeography | CO1 | Inter-relationships between the living world and the environment. |
| CO2 | Role of climate in soil development. |
| CO3 | States of water in environment and its importance. |
| CO4 | Structural and functional aspects of an ecosystem. |
| CO5 | Principles of phytogeography. |
| CO6 | Phytogeographical division of India. |
| SEM 4 B.Sc. | CORE – 10 | Plant Systematics | CO1 | Identification, classification and nomenclature of plants. |
| CO2 | Taxonomic hierarchy and species concept. |
| CO3 | Principles and rules of botanical nomenclature. |
| CO4 | Various system of classification by eminent taxonomists. |
| CO5 | Phylogenetic tree and cladogram for the study of. phylogeny of angiosperms. |
| SEMESTER - V | | | | |
| SEM 5 B.Sc. | CORE – 11 | Reproductive Biology of Angiosperms | CO1 | Mechanism of pollination and role of pollen biology. |
| CO2 | Types and structure of mature embryo sac. |
| CO3 | Basic concepts and methods to overcome self- incompatibility. |
| CO4 | Intra ovarian and in vitro pollination. |
| CO5 | Embryo and endosperm relationship. |
| CO6 | Importance and dispersal mechanism of seed. |
| CO7 | Causes and application of polyembryony and apomixes. |
| SEM 5 B.Sc. | CORE – 12 | Plant physiology | CO1 | Ascent of sap and mechanism of stomatal movement. |
| CO2 | Trans membrane pathway of water movement. |
| CO3 | Source-sink relationship. |
| CO4 | Mineral nutrition, role of essential elements and mineral deficiency symptoms in  plants. |
| CO5 | Chemical natures and bio assay of plant hormones. |
| CO6 | Physiological roles of plants growth regulators and inhibitors. |
| SEM 5 B.Sc. | DSE - 1 | Analytical Techniques in Plant Sciences | CO1 | Imaging and related techniques (light microscopy, fluorescence microscopy, flow  cytometry). |
| CO2 | Cell fractionation and centrifugation. |
| CO3 | Chromatography, x-ray crystallography and electrophoresis. |
| CO4 | Principles and application of spectrophotometer in biological research. |
| CO5 | Characterization of proteins and nucleic acids. |
| SEM 5 B.Sc. | DSE - 2 | Natural Resource Management | CO1 | Types and sustainable utilization of natural resources. |
| CO2 | Utilization and management of land. |
| CO3 | Water harvesting technology. |
| CO4 | Significance, types, threats and management strategies of biological resource. |
| CO5 | Renewable and non renewable sources of energy. |
| CO6 | Waste management and national and international efforts in resource management  and conservation. |

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| SEMESTER - VI | | | | |
| SEM 6 B.Sc. | CORE – 13 | Plant Metabolism | CO1 | Anabolic and catabolic pathways of plant metabolism. |
| CO2 | Mechanism of signal transduction. |
| CO3 | Carbon assimilation in green plants and role of photosynthetic pigments for this  process. |
| CO4 | Carbon oxidation and mechanism of respiration process. |
| CO5 | Mechanism of ATP synthesis taking into consideration of different experiments. |
| CO6 | Gluconeogenesis and its role in mobilization of lipids during seed germination. |
| CO7 | Physiology and biochemistry of nitrogen fixation. |
| SEM 6 B.Sc. | CORE – 14 | Plant Biotechnology | CO1 | The processes and applications of recombinant DNA technology. |
| CO2 | The role of restriction end nucleases in gene manipulation. |
| CO3 | The applicability of different kinds of cloning vectors. |
| CO4 | The use of genomic libraries in gene detection and characterization. |
| CO5 | The process of restriction mapping. |
| CO6 | The process of southern blot analysis. |
| CO7 | Summarizing methods used for DNA sequencing. |
| CO8 | The principles of the polymerase chain reaction (PCR) and their applications. |
| SEM 6 B.Sc. | DSC - 3 | Horticultural Practices andPost- Harvest Technology | CO1 | Scope and importance and branches of horticulture. |
| CO2 | Types, classification and salient features of some ornamental plants. |
| CO3 | Production, origin and distribution of vegetable and fruit crops. |
| CO4 | Techniques and limitations of horticulture. |
| CO5 | Importance of post harvest technology in horticultural crops. |
| CO6 | Disease control and management of horticultural crops. |
| SEM 6 B.Sc. | DSC - 4 | PROJECT | CO1 | To select the topic. |
| CO2 | Literature survey for the topic of the project. |
| CO3 | Skill in practical work, experiments, use of biological tool and techniques. |
| CO4 | Handle instruments for analysis and discuss their experimental results. |
| CO5 | To prepare project reports and present it using power point presentation. |
| CO6 | Work within a small team to achieve a common research goal. |

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| **Name of the Programme: B.Sc. Chemistry** | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.Sc. | CORE - 1 | INORGANIC CHEMISTRY-I | CO1 | Discuss Bohr’s theory of atom and spectrum of hydrogen atom. |
| CO2 | Explains quantum mechanical model of atom. |
| CO3 | Gives detail explanation of Schrodinger wave equation and its significance in H  –atom. |
| CO4 | Explains filling of electron in shell, sub shell and orbital. |
| CO5 | Discuss different fundamental properties like Atomic radius, Ionization Enthalpy, Electron Gain Enthalpy, Electro negativity and their variation in periodic table. |
| CO6 | Explains the bonding fundamentals for both ionic and covalent compounds including electro negativities, bond distances and bond energies using MO  diagrams and thermodynamic data. |
| CO7 | Discuss the percentage of ionic character in covalent bond and its determination  and rules associated with it. |
| CO8 | Provides qualitative idea of band theories of insulator and semiconductor,  different weak interactions. |
| CO9 | Explain VBT of H-bonding. |
| CO10 | Explain the principles of redox reaction involved in volumetric analysis of Fe, Cu,  and Mn. |
| SEM 1 B.Sc. | CORE - 1 | PRACTICAL | CO1 | Give the way of preparation of solution of different Morality and Normality. |
| CO2 | Explain the principle of acid base titration involving mixture. |
| CO3 | Explain the redox principle involving estimation of Fe and oxalic acid. |
| SEM 1 B.Sc. | CORE - 2 | PHYSICAL CHEMISTRY | CO1 | Discuss kinetics model of gas and their associated parameters. |
| CO2 | Explain the Maxwell Boltzmann distribution of molecular velocities. |
| CO3 | Discuss the deviation of real gases from ideal behavior, derive vander Waals’  equation of state, and explain its significance. |
| CO4 | Explain critical phenomena and determination of critical constants. |
| CO5 | Introduce general properties of liquid state. |
| CO6 | Describe in detail vapour pressure and surface tension and important  applications. |
| CO7 | Explain viscosity and its measurement and also discuss how molar refraction  measurements are useful in the structural elucidation. |
| CO8 | ExplainthegeneralprincipleofionicequilibriumwithpHandcommonioneffect. |
| CO9 | Derive Bragg equation and explain Miller indices. |
| CO10 | Explainrotatingcrystalandpowderpatternmethodofmonovalentioniccrystals. |
| CO11 | Describe the structure of glass and liquid crystals. |
| CO12 | Explain the principle of salt hydrolysis, buffer solution, solubility product, acid- base indicator and their application in qualitative indicator. |
| SEM 1 B.Sc. | CORE - 2 | PRACTICAL | CO1 | Determination of surface tension, viscosity by different methods. |
| CO2 | Preparation of buffer solutions and pH metric titration. |
| SEM 1 B.Sc. | GE - 1 | GENERIC –I | CO1 | Discuss Bohr’s theory of atom and spectrum of hydrogen atom. |
| CO2 | Explains quantum mechanical model of atom. |
| CO3 | Gives detail explanation of Schrodinger wave equation and its significance in H  –atom. |
| CO4 | Explains filling of electron in shell, sub shell and orbital. |
| CO5 | Describe the different types of electron displacement in organic compounds. |
| CO6 | Explain Electrophiles and Nucleophiles and stability of reaction intermediates. |
| CO7 | Explain reaction mechanism of different types of basic organic reactions. |
|  |  |  | CO8 | Different stereo chemical formulas are given along with geometrical (E/Z) and optical isomerism (D/L), (R/S) conventions and their resolution. |
| CO9 | Give details of calculation of lattice energy by Born Lande equation and Born  Haber cycle. |
| CO10 | VB and MO approach of homo diatomic molecule is explained. |
| CO11 | Chemistry of alkynes, alkanes, alkenes are discussed. |
| SEMESTER - II | | | | |
| SEM 2 B.Sc. | CORE -3 | ORGANIC CHEMISTRY | CO1 | Describe the different types of electron displacement in organic compounds. |
| CO2 | Explain Electrophiles and Nucleophiles and stability of reaction intermediates. |
| CO3 | Explain reaction mechanism of different types of basic organic reactions. |
| CO4 | Different stereo chemical formulas are given along with geometrical (E/Z) and optical isomerism (D/L), (R/S) conventions and their resolution. |
| CO5 | To understand aliphatic and aromatic, nucleophilic and electrophilic substitution  with mechanism and kinetics. |
| CO6 | To develop an ability to understand addition and elimination reactions with  mechanism and stereo chemical aspect. |
| CO7 | To understand the competition between substitution and elimination reactions  according to the conditions of reagents and substrate. |
| CO8 | ExplainBayerstraintheoryandconformationalanalysisandenergyleveldiagrams |
| CO9 | Explain aromatic electrophilic substitution reaction in arenes and their directing  influence. |
| CO10 | Explain Huckels rule with examples. |
| SEM 2 B.Sc. | CORE - 3 | PRACTICAL | CO1 | Determination of M.P and B.P of different solids and liquids. |
| CO2 | Paper chromatographic methods for mixture of organic compounds. |
| SEM 2 B.Sc. | CORE -4 | PHYSICAL CHEMISTRY | CO1 | Explain first law of thermodynamics and its application in different concepts like  heat capacities, enthalpy of reactions. |
| CO2 | Explanation of Kirchhoff’s equation. |
| CO3 | Discuss the second and third laws of thermodynamics and important concept of Gibbs Helmholtz equation, Joule- Thomson coefficient and Maxwell relations. |
| CO4 | Explain partial molar quantities like chemical potential. |
| CO5 | ExplainGibbsDuhemEquationandderivetherelationbetweenGibbsfreeenergy. |
| CO6 | Give thermodynamic derivation of relation between equilibrium constants. |
| CO7 | Introduce thermodynamic derivation of various colligative properties. |
| SEM 2 B.Sc. | CORE - 4 | PRACTICAL | CO1 | IntroduceCalorimeterexperimentstodetermineenthalpyofreactionofdifferent  process |
| SEMESTER - III | | | | |
| SEM 3 B.Sc. | CORE – 5 | INORGANIC CHEMISTRY | CO1 | Explain different general principle of Metallurgy with Ellingham diagrams. |
| CO2 | Introduces concept of acid and bases, HSAB principle and their application. |
| CO3 | Discuss the chemistry of s and p block element with special reference to oxidation state, allotropy, complex formation and hydride formation. |
| CO4 | Discuss the chemistry of compounds of Boron, Silanes, oxides of Nitrogen,  phosphorus and chlorine. |
| CO5 | Discuss the chemistry of fluorides of xenon. |
| CO6 | Explain VBT and MO treatment of XeF2 . |
| CO7 | Explain the chemistry of Inorganic polymers their structure, applications. |
|  | CO1 | Iodo/Iodimetric estimation of Copper and chlorine. |
|  |  | PRACTICAL | CO2 | Preparation of Manganese (III) Phosphate, Cuprous Chloride, Potash Alum. |
| SEM 3 B.Sc. | CORE – 6 | ORGANIC CHEMISTRY-II | CO1 | Elaboration of chemistry of Alkyl and Aryl halide with respect to substitution nucleophilic reaction and their solvent effect, Elimination vs. substitution  reaction. |
| CO2 | Brief introduction to organometallic compounds of Mg and Li. |
| CO3 | Discuss the general preparation of 10,20,30alcohols. |
| CO4 | Discuss the Chemistry of glycol, Pinacol-Pinacolone rearrangement. |
| CO5 | Discuss some name reaction of Phenol, Reimer Tiemann Reaction, Kolbe’s  Schmidt Reaction, Fries and Claisen rearrangement and their mechanism. |
| CO6 | Explain mechanism of important reaction of carbonyl compound and their  mechanism. |
| CO7 | Explain preparation, properties of monocarboxylic acids, dicarboxylic acids, acid  chlorides, anhydrides, esters and amides. |
| CO8 | Discuss mechanism of Dieckmann, Reformatsky, Hofmann –bromamide  degradation and Curtius rearrangement. |
| PRACTICAL | CO1 | Give methods of organic preparation using conventional and green approach. |
| CO2 | Bromination and Nitration of different organic compound. |
| SEM 3 B.Sc. | CORE – 7 | PHYSICAL  CHEMISTRY –III | CO1 | Discuss Gibbs phase rule for reactive and non reactive system. |
| CO2 | Derivation Clasius Clapeyron equation. |
| CO3 | Discussion on phase diagram water and sulphursystem , solid-liquid eqilibria, Pb-  Ag system, desilverisation of lead. |
| CO4 | Derivation of Gibbs-Duhem-Margules equation and its applications. |
| CO5 | Derivation of Nernst Distribution law and its application. |
| CO6 | Explain the kinetics of fast, second, complex, opposing, parallel, consecutive  reactions |
| CO7 | Explain steady state approximation. |
| CO8 | Explain temperature dependence of reaction, collision theory of reaction rate. |
| CO9 | Explain Michaelis- Menten mechanism for enzyme catalysis. |
| CO10 | Discuss different Isotherms (Langmuir, Freundlich, and Gibbs). |
| PRACTICAL | CO1 | Determine distribution coefficient of mixture of two components. |
| CO2 | Determination of rate constant of hydrolysis reaction and verification of  isotherms by experimental method. |
| SEM 1 B.Sc. | GE - 2 | GENERIC –II | CO1 | Explain the general principle of ionic equilibrium with pH and common ion effect  and solubility product. |
| CO2 | Explain the principle of salt hydrolysis, buffer solution, solubility product, acid- base indicator and their application in qualitative indicator. |
| CO3 | Discussed the laws of thermodynamics and derived Kirchhoff’s law. |
| CO4 | Explained thermodynamic approach to derivation of law of chemical equilibrium. |
| CO5 | Explained Le-Chatelier’s principle. |
| CO6 | General chemistry of alkyl and aryl halide with special emphasis of Benzyne  mechanism. |
| CO7 | General chemistry of alcohol, phenol, ether. |
| SEMESTER - IV | | | | |
| SEM 4 B.Sc. | CORE – 8 | INORGANIC CHEMISTRY-III | CO1 | Detailed discussion on VBT and CFT of co ordination compounds. |
| CO2 | Explain Jahn Teller distortion in octahedral and square planar geometry. |
| CO3 | Discuss qualitative aspect of MO and Ligand field theory and stereochemistry of  coordination compounds. |
| CO4 | Review of chemistry of Transition metals and explanation on stability of  transition state by Latimer and Bisworth diagrams. |
| CO5 | Discuss the chemistry of Ti, V, Cr, Mn, Fe and Cr. |
| CO6 | Discuss general chemistry of Lanthanides and Actinides and their separation. |
|  |  |  | CO7 | Give an insight into biochemistry of different metals. Deficiency of metal ions leading to disease. Iron and its application in biological system. |
| PRACTICAL | CO1 | Give procedure for gravimetric estimation of Ni, Cu, Fe, Al and chromatographic  separation of metal ions. |
| SEM 4 B.Sc. | CORE – 9 | ORGANIC CHEMISTRY-III | CO1 | Discuss the chemistry of Nitrogen containing compounds such as amines, nitro  compounds, nitriles. |
| CO2 | Give mechanism of some important reaction Gabriel phthalimide synthesis, Carbylamines reaction, Mannich reaction, Hoffmann’s exhaustive methylation,  Hofmann-elimination reaction. |
| CO3 | Givestructureelucidationandderivativepreparationofpolynuclearhydrocarbon. |
| CO4 | Give details of preparation of heterocyclic compounds by Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis, Fischer indole synthesis and  Madelung synthesis. |
| CO5 | Suggest structure elucidation of Nicotine and Hygrine and give medicinal importance of Hygrine, Quinine, Morphine, Nicotine, Cocaine and Reserpine. |
| CO6 | Give structure elucidation of Citral, Neral and terpineol and isoprene rule. |
| PRACTICAL | CO1 | Give methods for detection of extra element and detection of functional group |
| SEM 4 B.Sc. | CORE – 10 | PHYSICAL  CHEMISTRY –IV | CO1 | State Faradays laws, Kohlrausch’s law and Ostwald’s dilution law and explain  Debye HuckelOnsagar equation. |
| CO2 | Determination of transport number by Hittorf’s moving boundary methods. |
| CO3 | Describe conductometric and potentiometric titrations. |
| CO4 | Explain reversible cell and different types of reversible electrodes. |
| CO5 | Explain the applications of emf measurements. |
| PRACTICAL | CO1 | Gives methods for conductometric titration and potentiometric titration of  different acids vs. bases. |
| SEMESTER - V | | | | |
| SEM 5 B.Sc. | CORE – 11 | ORGANIC CHEMISTRY-IV | CO1 | Explain structure, synthesis and reaction of Adenine, Guanine, Cytosine, Uracil  and Thiamine. |
| CO2 | Give salient features of mechanism of enzyme action, coenzymes and co factors,  enzyme inhibition and their biological role. |
| CO3 | Give basic information about Amino acid, protein and peptides. |
| CO4 | Fundamentals of hydrogenation of fats, oils and their saponification value and  iodine number. |
| CO5 | Give structure and importance of Paracetamol, Ibuprofen, Chloroquine, Chloroamphenicol, Vitamin – C, Ranitidine which are widely used  pharmaceuticals. |
| PRACTICAL | CO1 | Give preparation methods for Aspirin, Phenacitin, Divol, Aluminium hydroxide  gel, Milk of magnesia. |
| SEM 5 B.Sc. | CORE – 12 | PHYSICAL  CHEMISTRY –V | CO1 | State the postulates of Quantum Mechanics |
| CO2 | Apply Schrodinger wave equation to particle in 1 D box and 3 D box and H atom |
| CO3 | Explain quantum numbers and its significance. |
| CO4 | Apply Schrodinger equation for multi electron atoms.(spherical and polar  coordinates) |
| CO5 | Discuss LCAO-MO and VB treatment of H2, HF, LiF, BeH2, and H2O. |
| CO6 | Discuss the principles Vibrational spectroscopy, Vibrational rotational  spectroscopy, Electronic spectroscopy. |
| CO7 | Discuss some important terms like Morse potential, overtones, P, Q, R branches,  Stokes and Anti Stokes lines, Frank Condon Principle. |
| CO8 | Discuss Laws of photochemistry and their significance, quantum yield,  chemiluminiscence, photo stationary reaction. |
| PRACTICAL | CO1 | Determination of concentration different solution spectrophotometric titration. |
|  |  |  | CO1 | Discuss classification of polymers, functionality and its importance. |
| SEM 5 B.Sc. | DSE - 1 | POLYMER CHEMISTRY | CO2 | Discuss the mechanism of step growth, radical chain growth, ionic chain, co  ordination polymerization, co polymerization. |
| CO3 | Procedure for crystalline M.P. determination, factors affecting is given. |
| CO4 | Explain the procedures for determination of molecular weight, polydispersity  index and glass transition temperatures. |
| CO5 | Explain the thermodynamics of polymers solutions. |
| CO6 | Properties simple polymers including preparation are explained. |
| CO7 | A good knowledge about the Industrial Applications of Polymers |
| CO8 | Identify the commercially important Polymers. |
| PRACTICAL | CO1 | Procedure given for preparation, purification, polymerization of MMA, AA, Nylon  6,6/6, IPC, acrylamide, Urea Formaldehyde, Novalac resin. |
| CO2 | Determination of molecular weight by viscometer, end group analysis, and  colorimetric method. |
| SEM 5 B.Sc. | DSE - 2 | GREEN CHEMISTRY | CO1 | Give detail information of twelve principle of green chemistry. |
| CO2 | Explain the process of safer design for chemical synthesis to avoid Bhopal Gas  Tragedy, Flixiborough accident. |
| CO3 | Discuss the analytical technique to prevent, minimize the generation of  Hazardous waste. |
| CO4 | Designing some greener alternative to Strecker synthesis, Hoffmann Elimination,  Diels Alder Reaction, Simmons Smith Reaction. |
| CO5 | Designing some green synthesis of poly lactic acid, fats, oil, Tran’s fat oils,  Recyclable Carpet. |
| CO6 | Give suggestion for future trends in green chemistry. |
| PRACTICAL | CO1 | Methods given for green synthesis of Vitamin-c, preparation of biodiesel from  vegetable oil. |
| CO2 | Calculation of atom economy of some reaction. |
| CO3 | Replacement of green solvent in some reaction, microwave synthesis. |
| SEMESTER - VI | | | | |
| SEM 6 B.Sc. | CORE – 13 | INORGANIC CHEMISTRY-III | CO1 | Discussion on organometallic compound with special reference to metal  carbonyls. |
| CO2 | Suggest methods of preparation and structural elucidation of mononuclear and  binuclear carbonyl of transition metals with VBT. |
| CO3 | Give structure of some simple organometallic compound of Li, Al, Mg. |
| CO4 | Explaintheoreticalprincipleinvolvedingroupanalysisanddetectionofunknown  radicals using solubility product, common ion effect. |
|  |  |  | CO5 | Explain the mechanism of reaction in sq planar complexes, substitution in  octahedral complexes, Trans effect explained. |
| CO6 | Thermodynamic and kinetic parameters are derived for reaction of metal  complexes. |
| PRACTICAL | CO1 | 1. Procedure for semi micro qualitative analysis of mixture of six radical is given. |
| SEM 6 B.Sc. | CORE – 14 | ORGANIC  CHEMISTRY –IV | CO1 | WoodwardFischerruleforcalculationof of differentorganic  systems.(Aldehyde, ketone, carboxylic acid, esters, dienes, homoannular,  heteroannulardienessystem). 𝜆𝑚𝑎𝑥 |
| CO2 | Give definition and example of Chrmophore, Auxochrome, Bathochromic shift,  Hypsochromic shift. |
| CO3 | Application of IR spectrum in determination of functional group, H-bonding,  Finger print region. |
| CO4 | DiscussedbasicprincipleofNMRspectroscopy,chemicalshift,spin-spincoupling, Anisotropic effect, determination of NMR of simplecompound. |
| CO5 | Discussed basic principle of mass spectroscopy, instrumentation and application. |
| CO6 | Explain the biological importance of carbohydrates and their interconversion by  Killiani Fischer synthesis, Ruff degradation. |
| CO7 | Given synthesis and application of some important dyes Methyl orange, Congo red, Malachite green, crystal violet, and phenolphthalein, Fluorescein, Alizarin  and Indigo. |
| CO8 | Introduce classification of polymer, molecular weight determination and some  application of polymer compounds. |
| PRACTICAL | CO1 | Procedure given for preparation of polyacrylate, urea formaldehyde, analysis of  carbohydrates. |
| CO2 | Qualitative analysis of unknown organic compound. |
| SEM 6 B.Sc. | DSC - 3 | INDUSTRIAL CHEMICALSAND ENVIRONMENT | CO1 | Industrial preparation of oxygen, nitrogen, hydrogen, acetylene, carbon  monoxide, chlorine, sulphur dioxide, argon, neon. |
| CO2 | Given preparation and hazards in handling HCl, HNO3, H2SO4, NaOH, H2O2,  NaCl, Potash alum,K2Cr2O7, KMnO4. |
| CO3 | Discuss the procedure for preparation of metals for semiconductor. |
| CO4 | Elaborately discuss about biogeochemical cycles, source, and nature of air  pollution. |
| CO5 | Give notes of photochemical smog, green house effect, ozone layer depletion. |
| CO6 | Elaborately explain Hydrological cycle, source and nature of water pollution and  ways of treatment of polluted water. |
| CO7 | Discuss the effluent treatment process in electroplating, textile, tannery, diary,  petrochemical and fertilizer industry. |
| CO8 | Explain water quality parameter. |
| PRACTICAL | CO1 | Give experimental methods for determination of DO, BOD, COD, dissolve CO2, in  water and SPM in air. |
| CO2 | Procedure for estimation of chlorine, chloride, sulphate and salinity of water by  titration method. |
| SEM 6 B.Sc. | DSC - 4 | DISSERTATION WORK | CO1 | Students express their creativity and develop higher order thinking skills. |
| CO2 | Team work gives more innovative ideas. |
| CO3 | Learn to prepare power point presentation. |
| CO4 | Develops an aptitude for doing research. |
| CO5 | Gets preliminary ideas for writing a thesis. |
| CO6 | For analysis and interpretation of data they will use more resources. |

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| **Name of the Programme: B.Sc. Mathematics** | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.Sc. | CORE - 1 |  | CO1 | The main emphasis of this course is to equip the students with necessary analytic and technical problems. To plot various curves and to solve problems associated with differentiation and integration of Vector functions. |
| SEM 1 B.Sc. | CORE - 2 |  | CO1 | The objective is to acquaint students with basic counting principle, Set, Logic,  Matrix theory etc. |
| SEM 1 B.Sc. | GE - 1 |  | CO1 | The objective of the course is to acquire knowledge on analytical technical  problems and solve problems with integration and differentiation. |
| SEMESTER - II | | | | |
| SEM 2 B.Sc. | CORE -3 |  | CO1 | The objective of the course is to acquire knowledge on basic properties of  the field. |
| SEM 2 B.Sc. | CORE -4 |  | CO1 | The objective of this course is to familiarize the students with various methods of solving differential Equation and have application through models. |
| SEM 2 B.Sc. | GE - 2 |  | CO1 | TheobjectiveistoacquaintstudentswithbasicgroupandRingtheoryandalsoon  matrix. |
| SEMESTER - III | | | | |
| SEM 3 B.Sc. | CORE – 5 |  | CO1 | The students have the objective to have knowledge on read functions and  understand the uniform continuing mean value theories etc. |
| SEM 3 B.Sc. | CORE – 6 |  | CO1 | The course will lead to basic course in advanced Mathematics. |
| SEM 3 B.Sc. | CORE – 7 |  | CO1 | TheobjectivesisunderstandbasicmethodofsolvingpartialdifferentialEquations. |
| SEMESTER - IV | | | | |
| SEM 4 B.Sc. | CORE – 8 |  | CO1 | The objective is to acquaint students with various America methods of finding  solution of different types of problems. |
| SEM 4 B.Sc. | CORE – 9 |  | CO1 | The objective is to know about series of functions and Riemann integration. |
| SEM 4 B.Sc. | CORE – 10 |  | CO1 | The objective is to acquire knowledge about modern mathematics vehicle be  helpful for application of computer. |
| SEMESTER - V | | | | |
| SEM 5 B.Sc. | CORE – 11 |  | CO1 | The Course is introduces for functions of several variables. This is used for all  streams for use of calculus. |
| SEM 5 B.Sc. | CORE – 12 |  | CO1 | The objective is use of techniques for probabilities and haw different statistical  methods are used. |
| SEM 5 B.Sc. | DSC - 1 |  | CO1 | This course aimed at equipping the students with analytic & technical skills using  calculus in non theoretical forms. |
| SEM 5 B.Sc. | DSC - 2 |  | CO1 | This course aimed at making students acquainted with mathematics of abstract  nature & number theory. |
| SEM 5 B.Sc. | DSE - 1 |  | CO1 | The objective of this course is to acquaint the students with the abstract  mathematical structures like Groups & Rings used in higher mathematics & engineering. |
| SEMESTER - VI | | | | |
| SEM 6 B.Sc. | CORE – 13 |  | CO1 | Theobjectiveistoprovideintroductionfunctionofacomplexvariableandmetric. |
| SEM 6 B.Sc. | CORE – 14 |  | CO1 | The course is to familiarize the students on Industrial problems and to solve it  through the LPP. |
| SEM 6 B.Sc. | DSC - 3 |  | CO1 | This course aimed at enhancing the knowledge of the students in the field of real  numbers & the concept of sequences & series of functions. |
| SEM 6 B.Sc. | DSC - 4 |  | CO1 | Thiscourseaimedatacquaintingthestudentswithvariousnumericalmethodsfor finding solutions to different problems in real life. Industrial sectors as well as different branches of Science &technologies. |
| SEM 6 B.Sc. | DSE - 2 |  | CO1 | Theobjectiveofthiscourseistomakethestudentsfamiliarizedwiththeproblems in industrial sectors & how to solve them so that industrial growth will not be hampered. |

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| Name of the Programme: B.Sc. Physics | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.Sc. | CORE - 1 | MATHEMATICAL PHYSICS-1 | CO1 | Calculus which gives idea about plotting of functions or curves, 1st order & 2nd Order differential equations. |
| CO2 | Calculus-II, Partial derivatives, differential, integrating factors, Lagrange’s  multipliers, Vector algebra |
| CO3 | Orthogonal curvilinear co-ordinates Dirac delta functions and its properties |
| CO4 | Vector Differentiation Gardient, Divergence, Curl, Laplacian operator, Vector  integration. |
| SEM 1 B.Sc. | CORE - 2 | MECHANICS | CO1 | Rotational dynamics, centre of mass, angular momentum. Theorems to calculate moment of inertia of different bodies. Non-inertial frames, centrifugal and  coriolis force. |
| CO2 | Properties of matter like Elasticity. Fluid in motion and viscosity, Gravity waves  and Ripple. |
| CO3 | Law of Gravitation, Gravitational field and potential along with central force motion. Two body problem differential equation of motion of orbit Geo-  stationary satellites and Global positioning system (GPS). |
| CO4 | Simpleharmonicmotion,dampedandundampedvibration.Forcedvibrationand  resonance, pendulums. |
| CO5 | Einstein’s Special theory of relativity, Lorentz transformation equation. Einstein’s  mass energy relation E=mc2 and Relativistic Doppler’s effect. |
| SEMESTER - II | | | | |
| SEM 2 B.Sc. | CORE -3 | ELECTRICITY AND MAGNETISM | CO1 | Electric field, potential, Gauss’s law and its application, electrostatic energy,  Laplace and Poissions equations. |
| CO2 | Magnetic effect of electric current, Biot-Savart’s law Ampere’s circuital law and  their applications, Ballistic Galvanometer. |
| CO3 | Dielectrics properties of matter, Magnetic substances & properties Faraday’s law  of electro-magnetic induction, Maxwell’s equations & applications. |
| CO4 | A.C. circuits, transient current its growth and decay. |
| CO5 | Network theorems with current and voltage sources. |
| SEM 2 B.Sc. | CORE -4 | WAVES AND OPTICS | CO1 | MatrixformulationofGeometricaloptics.Cardinalpoints.Dispersion,application tothinandthicklenses.Eyepiece,Electromagneticnatureoflight,Huygen’s  principle |
| CO2 | Types of waves and their velocities, S.H.M and Lissajous figures. |
| CO3 | Interference, Newton’s ring, Colour in thin films. Michelson and fabry-perrot  interferometer. |
| CO4 | Diffraction through Single slit, Double slit and Plane transmission Grating. Theory  of Zone plate. Resolving power of Telescope. |
| SEMESTER - III | | | | |
| SEM 3 B.Sc. | CORE – 5 | MATHEMATICAL PHYSICS-II | CO1 | Fourier series, even and odd function. Differentiation and integration of Fourier  series. |
| CO2 | Frobenius method and its application to solve Legendre and Hermite differential  equations. |
| CO3 | Legendre and Hermite polynomials and their properties. |
| CO4 | Beta and Gamma functions and their properties. |
| CO5 | Solutions of partial Differential equations. |
| CO6 | Laplace equations and solving different problems using it. |
|  |  |  | CO1 | 1st and 2nd law of thermodynamics. |
| CO2 | Thermodynamics scales of temperature, Carnot’s cycle and theorem. |
| CO3 | Entropy and T-S diagram for Carnot’s and third law of thermodynamics. |
| CO4 | Thermodynamics potentials, Maxwell’s thermodynamic relations and its  applications, phase transitions. |

SEM 3 B.Sc.

CORE – 6

THERMAL PHYSICS

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|  |  |  | CO5 | Kinetic theory of gases. Maxwell-Boltzmann’ law Distribution of velocities. |
| CO6 | Mean free path and transport phenomena in ideal gases. |
| CO7 | Real gases and its deviation from ideal gas equation. Vander wall gas equation  and Joule’s porous plug experiment. |
| SEM 3 B.Sc. | CORE – 7 | ANALOG SYSTEM AND APPLICATIONS | CO1 | P and T type semiconductor, P-N junction diode, forward biasing and reverse  biasing. |
| CO2 | P-N junction diode as full wave and half wave rectifier. |
| CO3 | Concept of Zener diode, LED, Photo diode and Solar cells. |
| CO4 | Bipolar transistors and its use as an amplifier and hybrid models, push pull  amplifier. |
| CO5 | R-C coupled Amplifier, Feedback Amplifiers and Culprit’s oscillators, R-C phase  shift oscillators. |
| CO6 | Operational Amplifiers and their applications. |
| SEMESTER - IV | | | | |
| SEM 4 B.Sc. | CORE – 8 | MATHEMATICAL PHYSICS-III | CO1 | Complex analysis |
| CO2 | Cauchy-Riemann condition |
| CO3 | De Moivres theorem, Cauchy’s theorem |
| CO4 | Cauchy integral Formula, Laurent’s and Taylor’s expansion. Residue theorems. |
| CO5 | Integral transforms, Fourier transforms and its applications, Finite Trigonometric  transforms. |
| CO6 | Dirac-Delta functions, inverse Fourier transform and convolution theorems. |
| CO7 | Laplace transform and its properties. |
| CO8 | Application of LT solve Different equations. |
| SEM 4 B.Sc. | CORE – 9 | ELEMENTS OF MODERN PHYSICS | CO1 | Inadequacyofclassicalphysics,photoelectriceffect,ComptonEffect.Dualnature  of radiation. |
| CO2 | Rutherford’s model of atom Bohr’s Model of hydrogen atom. Summerfeld’s  modification of Bohr’s theory. |
| CO3 | De-Broglie hypothesis, Wave-particle duality, Wave packet representation.  Heisenberg’s Uncertainty principle and applications. |
| CO4 | Characteristics of nucleus, Binding Energy, Nuclear force, Liquid drop model,  Semi-empirical mass formula and Binding energy. |
| CO5 | Radio activity, Alpha decay and Beta decay, Gamma emission, pair creation by  Gamma photons. |
| CO6 | Nuclear fission and nuclear fusion. Nuclear reactors. |
| SEM 4 B.Sc. | CORE – 10 | DIGITAL SYSTEM AND APPLICATIONS | CO1 | Active and passive components of integrated circuits and its classification. |
| CO2 | Digital Circuits, Difference between analog and digital circuits. |
| CO3 | Gates, Boolean algebra and De-Morgan’s theorems, Karnaug Map |
| CO4 | CRO and its applications. |
| CO5 | Data processing circuits, arithmetic circuits and timers. |
| CO6 | Introduction to computer organizations. |
| CO7 | Shift registers and counters. |
| SEMESTER - V | | | | |
| SEM 5 B.Sc. | CORE – 11 | QUANTUM MECHANICSAND APPLICATIONS | CO1 | Schrodinger time dependent equation, properties of wave function and  uncertainty principle |
| CO2 | Operatorscommutationalgebra,Hermitianoperators,Eigenfunction&quantum  mechanical scattering & tunnelling. |
| CO3 | Time independent Schrodinger equation and its applications. |
| CO4 | Atoms in electric and magnetic fields. Vector atom model, Zeeman effect,  Paschen back effect and stark effect |
| SEM 5 B.Sc. | CORE – 12 | SOLID STATE | CO1 | Crystal structure Lattice with basis. Unit cell, types of Lattice. |
| CO2 | Diffraction of x-rays by crystals and Bragg’s law. |
| CO3 | Lattice vibrations and phonons. Dulong and Petit’s Law. |
| CO4 | Einstein and Debye theories of specific heat of solids. |
| CO5 | Magnetic properties of matter. Langevin’s theory of dia and paramagnetism. |
| CO6 | Curie’s law and Weiss theory of ferromagnetism, Hysteresis. |

PHYSICS

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|  |  |  | CO7 | Dielectric properties of matter. Clausius and Mossoti equation. |
| CO8 | LASER, Spontaneous and stimulated emission, Ruby LASER , He-ne LASER. |
| CO9 | Kronig-Penny model of band gap. Hall effect. |
| CO10 | Super conductivity, Meissners effect, London’s equation, BCS theory, types of  super conductors. |
| SEM 5 B.Sc. | DSE - 1 | CLASSICAL DYNAMICS | CO1 | Generalised co-ordinates, Velocities, Force, Principle of virtual work, Lagrange’s  equation of motion from de-Alembert’s principle. |
| CO2 | Lagrangian and its applications. |
| CO3 | Hamilton’s principle and derivation of Lagrange’s equations from Hamilton’s  principle,BranChistochroneproblem,applicationtocentralforceandcoupled oscillators. |
| CO4 | The equation of motion and first integrals, classification of orbits. |
| CO5 | Special theory of relativity, Lorentz transformation equations and mass-energy  relation. |
| CO6 | Minkowski space, Light cone, World line, Four vectors, Doppler’s effect from a  four vector. |
| CO7 | Conservation of four momentums, Decay of unstable particle. |
| SEM 5 B.Sc. | DSE - 2 | NUCLEAR AND PARTICLE PHYSICS | CO1 | Characteristics of nucleus, Binding energy, angular momentum, parity and  magnetic moments. |
| CO2 | Alphadecay,Betadecay,NeutrinohypothesisandGammadecay,Gammafactor,  Geiger-Nuttal law, neutrino hypothesis. |
| CO3 | Liquiddropmodel,semiempiricalmassformula,nuclearmagicnumberandshell  model. |
| CO4 | Ionization chamber and GM counter and detectors for nuclear radiation. |
| CO5 | Particle accelerator, cyclotron, Synchrotrons. |
| CO6 | Particle physics, particle interactions, Parity, Baryon number, strangeness and  charm, Elementary ideas of quarks and gluons. |
| SEMESTER - VI | | | | |
| SEM 6 B.Sc. | CORE – 13 | ELECTROMAGNETI C THEORY | CO1 | Maxwell’s equation, Lorentz and coulomb gauge , Poynting theorems and  Poynting vectors. |
| CO2 | EM wave propagation in unbounded media, propagation through conducting  media, Plasma Frequency, Skin depth and relaxation time. |
| CO3 | EM in bounded media, reflection and refraction of plane wave, Fresnel’s formula for perpendicular and parallel polarization, TIR, Metallic reflection. |
| CO4 | Polarization of EM waves, Double refraction and Nicol prism, Plane, Circular,  Elliptical polarised light. |
| CO5 | Rotatory polarization, Phase retardation plates, Babinet’s compensator and its  uses. |
| CO6 | Biot’s law for rotatory polarization. Fresnel’s theory of optical polarization,  Polarimeter. |
| SEM 6 B.Sc. | CORE – 14 | STATISTICAL MECHANICS | CO1 | Macrostate and Microstate, concept of ensemble, Maxwell-Boltzmann’s  Distribution law of energies. |
| CO2 | Classicalstatistics,Gibb’sparadox,Sackur-Tetrodeequation,lawofequipartition of energy. Specific heat and its limitations. Negativetemperature. |
| CO3 | Quantum statistics, Bose-Einstein and Fermi-Dirac distribution function. Bose-  Einstein condensation, Density of states, Fermi gas. |
| CO4 | Black body radiation, Kirchhoff’s law, Stefan Boltzmann’s law, Wien’s  Displacement law Rayleigh Jeans law. |
| CO5 | Planck’s law of black body radiation and derivation of other laws from it. |
|  |  |  | CO1 | Nano scale system, Nano structure, Quantum confinement of carriers in 3D, 2D,  1D Nano structure. Density of states and its consequences. |

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| SEM 6 B.Sc. | DSC - 3 | NANO-MATERIALS AND APPLICATION | CO2 | SynthesisofNanostructurematerials,physicalvapourdeposition,Sol-Gelelectro deposition,E-beamevaporation,pulsedLASERdeposition,MBEgrowthof  quantum dots. |
| CO3 | X-ray diffraction, Optical microscopy, Scanning electron microscopy, Scanning  tunnelling microscopy. |
| CO4 | Applications of Nano particle, photonic devices, quantum dots, magnetic quantumwell,micro-electromechanicalsystems,Nanoelectromechanical  systems. |
| CO5 | Nano material devices, optical data storage, Magnetic data storage. |
| Name of the Programme: B.Sc. Zoology | | | | |
| **Name of**  **the Class** | **Course**  **Code** | **Course Title** | **Course Outcome** | |
| SEMESTER - I | | | | |
| SEM 1 B.Sc. | CORE - 1 | Diversity and Evolution of Non- Chordates | CO1 | Provide knowledge about different kinds of invertebrates. |
| CO2 | Provide knowledge about gradual complexity in the body organization. |
| CO3 | Differentiation of unicellular and multicellular animals. |
| CO4 | Structural peculiarities of different non-chordates. |
| CO5 | Provide knowledge of significance of non-chordate organisms. |
| SEM 1 B.Sc. | CORE - 2 | Principlesof Ecology and biostatistics | CO1 | Ecosystem, food chain, food web, energy flow, ecological pyramids. |
| CO2 | Basic concepts of population. |
| CO3 | Provide knowledge about characters of community, diversity and species  richness. |
| CO4 | Support the students to enhance their knowledge about nutrient and  biogeochemical cycles. |
| CO5 | Provide knowledge for conservation of biodiversity. |
| CO6 | It provides the basic knowledge of biostatistical calculation and application  with analysis. |
| SEMESTER - II | | | | |
| SEM 2 B.Sc. | CORE -3 | Diversity and Evolution of Non- Chordates | CO1 | The students will study different types of non-chordates like Annelida,  Arthropoda, Onychophora, Mollusca and Echinodermata. |
| CO2 | They will study their classification along with ecology and life cycle. |
| CO3 | Role of Onychophora in evolutionary significance. |
| CO4 | It provides the types of coelom and metamerism in Annelida. |
| CO5 | Give idea about the respiratory system of Mollusca and the special feature  of Echinodermata. |
| SEM 2 B.Sc. | CORE -4 | Physiology : Life Sustaining System | CO1 | It is an important core for the students which provide the firm knowledge  about human physiology. |
| CO2 | It is easy to understand the process and mechanism of digestion. |
| CO3 | To increase the basic knowledge of respiration and its system. |
| CO4 | Provide knowledge about the physiological knowledge of excretion and  regulation of acid-base balance. |
| CO5 | Provide knowledge about composition, coagulation and disorder of blood. |
| CO6 | This core gives elaborate knowledge about the structure, function,  disorder and regulation of heart. |
| SEMESTER - III | | | | |
| SEM 3 B.Sc. | CORE – 5 | Diversity and Distribution of Chordata | CO1 | Knowledge of protochordates and their origin. |
| CO2 | Information about structural peculiarities of various protochordates. |
| CO3 | Gaining knowledge of Petromyzon and Myxine. |
| CO4 | It supports to increase the knowledge of fishes and amphibia. |
| CO5 | It makes to understand the migration of birds and different adaptations in  reptiles. |
| CO6 | It provides information to increase the knowledge about mammals and  zoogeographical distribution of animals |
|  |  |  | CO1 | In acquiring knowledge about functions of different parts of our body. |
| CO2 | In gaining knowledge about different types of animal tissues, their  location, structure and functions. |

Physiology:

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| SEM 3 B.Sc. | CORE – 6 | Control and Coordination | CO3 | Understanding about the detail mechanism of transmission of nerve  impulse through the nerve cell. |
| CO4 | Information about mechanism of muscle contraction. |
| CO5 | It provides detailed knowledge about the reproductive system of humans. |
| CO6 | Knowledge about various glands present in our body |
| SEM 3 B.Sc. | CORE – 7 | Comparative Anatomy of Vertebrates | CO1 | It provides knowledge to study the integumentary and skeletal system of  vertebrates. |
| CO2 | It gives a clear cut idea about the gills, lungs, air sacs and alimentary  system of vertebrates. |
| CO3 | It provides knowledge about general plan of circulation and evolution of  heart. |
| CO4 | Evolutionofkidney,genitalsystemandtypesofmammalianuteriisclearly  understood. |
| CO5 | Senseorgansandthenervoussystemisclearlyunderstoodfromthiscore. |
| SEMESTER - IV | | | | |
| SEM 4 B.Sc. | CORE – 8 | Biochemistry of Metabolic Processes | CO1 | It gives information about the biomolecules. |
| CO2 | Learning of carbohydrate metabolism. |
| CO3 | Provides knowledge about protein metabolism. |
| CO4 | Provides knowledge about lipid metabolism. |
| CO5 | Provides knowledge to increase mechanism of enzyme action, respiratory  chain, enzyme kinetics and oxidative phosphorylation |
| SEM 4 B.Sc. | CORE – 9 | Cell Biology | CO1 | Knowledge of prokaryotes and eukaryotes, mycoplasma, virus, prions etc. |
| CO2 | Transport across cell membrane, cell junctions, and structure and function  of ER, mitochondria. |
| CO3 | Knowledge of cytoskeleton, aging and nucleus. |
| CO4 | Process of cell death clearly understood. |
| CO5 | Provides knowledge of cell cycle. |
| CO6 | Information about cell signaling |
| SEM 4 B.Sc. | CORE – 10 | Principles of Genetics | CO1 | Learn the methods of Mendelian principles. |
| CO2 | Knowledge of linkage and crossing over. |
| CO3 | Provide knowledge about the chromosomal and gene mutation. |
| CO4 | Information about quantitative genetics and sex determination process. |
| CO5 | Provide knowledge about extra chromosomal inheritance and antibiotic  resistance. |
| SEMESTER - V | | | | |
| SEM 5 B.Sc. | CORE – 11 | Developmental Biology | CO1 | Support to increase the concept of cell-cell interaction and gene  expression. |
| CO2 | Provide knowledge about gametogenesis, cleavage and fate map. |
| CO3 | Gives information about implantation of the embryo and placenta. |
| CO4 | Provideknowledgeofhormonalregulationinpostembryonicdevelopment. |
| CO5 | Process and cause of teratogenesis. |
| CO6 | Gives an idea about stem cell culture and amniocentesis |
| SEM 5 B.Sc. | CORE – 12 | Molecular Biology | CO1 | It provides detail knowledge of DNA structure and replication. |
| CO2 | Give information about translation and transcription process. |
| CO3 | Provide knowledge of gene, splicing mechanism etc. |
| CO4 | Acquiring knowledge about gene regulation. |
| CO5 | Support to increase the knowledge of lac operon, trp-operon |
| SEM 5 B.Sc. | DSE - 1 | Animal Behavior | CO1 | Provide knowledge about mechanism of behavior. |
| CO2 | It gives an idea about reflex action, reflex path etc. |
| CO3 | Provide knowledge about the social behavior of animals. |
| CO4 | Sexual behavior of the animals is clearly understood. |
| CO5 | Learn about biological clock. |
|  |  |  | CO1 | Knowledge about bee-keeping and bee-economy. |
| CO2 | It provides knowledge about rearing of silkworm and importance of  silkworm. |
| SEM 5 B.Sc. | DSE - 2 | Economic Zoology | CO3 | It gives information about fish management, breeding, nursing and  stocking. |
| CO4 | Information about aquaculture like prawn farming and pearl culture. |
| CO5 | Provide idea about dairy and poultry farming to increase the economic  condition. |
| SEMESTER - VI | | | | |
| SEM 6 B.Sc. | CORE – 13 | Immunology | CO1 | Demonstrate the basic knowledge of immunological processes at a  cellular and molecular level. |
| CO2 | Define central immunological principles and contents. |
| CO3 | Outline, compare and contrast the key mechanisms and cellular players of  innate and adaptive immunity and how they relate. |
| CO4 | Elucidate the genetic basis for immunological diversity and the generation  of adaptive immune responses. |
| SEM 6 B.Sc. | CORE – 14 | Evolutionary Biology | CO1 | It provides an idea about history of life |
| CO2 | Provide information about evidences of evolution. |
| CO3 | To learn about isolation mechanism, natural selection with sexual and  artificial selection. |
| CO4 | It supports to increase the knowledge of population genetics. |
| CO5 | Information about species concept |
| SEM 6 B.Sc. | DSE - 3 | Microbiology | CO1 | Scope and importance of microbiology. |
| CO2 | Knowledge of gram positive and gram negative bacteria. |
| CO3 | Provide knowledge of bacterial classification. |
| CO4 | Knowledge of economic importance of fungi and Protista. |
| CO5 | Structure of virus and different bacterial, viral, fungal and protozoan  disease. |
| CO6 | It provides knowledge about the interaction of immuno response and  antibiotics. |
| SEM 6 B.Sc. | DSE - 4 | project | CO1 | To select the topic. |
| CO2 | Literature survey for the topic of the project. |
| CO3 | Skill in practical work, experiments, use of biological tool and techniques. |
| CO4 | Handle instruments for analysis and discuss their experimental results. |
| CO5 | To prepare project reports and present it using power point presentation. |
| CO6 | Work within a small team to achieve a common research goal. |