COURSE OUTCOMES OF B.A. ENGLISH LANGUAGE &

LITERATURE

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Listening Speaking and Reading	EN1111.1	Language course 1	4	5 (Total 90)
Course Outcomes					
CO1	Understand the nuances of listening, speaking and reading English				
CO2	Identify the problems and barriers students face in listening				
CO3	Understand the sub-skills of listening				
CO4	Rudimentary training in English phonetics				
CO5	Describe the methods to improve reading				
CO6	Develop the skills for speed reading				
CO7	Difference between speaking on formal and informal occasions				
CO8	Identify the appropriate use of language functions while greeting/complaining/apologizing				
CO9	Understand the differences between skimming and scanning				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Writings on Contemporary Issues	EN1121	Foundation course 1	2	4 (Total 72)
Course Outcomes					
CO1	Understand the outcome of globalization				
CO2	Describe Tagore's vision of love in the poem "unending love"				
CO3	Describe the impact of globalization on education				
CO4	Recognize the environmental issues in India				
CO5	Describe the criticism associated with the poem "the world is too much with us"				
CO6	Explain the author's concerns over human actions mentioned in the poem "God's Grandeur"				
CO7	Describe the concept of human rights presented in the essay "Thinking about Human Rights"				
CO8	Understand Blake's observations on human conditions outlined in the poem "London"				
CO9	Critical analysis of the essay "Gender, Culture and History"				
CO10	Illustrate the social evils outlined in the fiction "Untouchable"				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Reading Poetry	EN1141	Core Course 1	4	6 (Total 108)
Course Outcomes					
CO1	Write down the comparison between subjective and objective poetry				
CO2	Understand the classification of poetry				
CO3	Write down the poetic devices that can be used to create rhythm				
CO4	Understand the poetic devices that enhance meaning				
CO5	Write down the different types of stanza				
CO6	Critical analysis of the poem "Sonnet 18" by William Shakespeare				
CO7	Describe the author's poetic career and motivations outlined through "The Circus Animals' Desertion"				
CO8	Write down the advantages of practical criticism				
CO9	Understand Robert Frost's comments on human decisions outlined in the poem "The Road Not Taken"				
CO10	Write down the summary and analysis of the poem "An introduction"				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	History of English Literature 1	EN1131	Complimentary Course 1	3	3 (Total 54)
Course Outcomes					
CO1	Understand the early history of England				
CO2	The effect of The Anglo Saxon Heptarchy on English literature				
CO3	Understand the influence of the Viking and Norman invasions				
CO4	The significance of the poem "Beowulf"				
CO5	Write down the characteristics of Medieval romances				
CO6	Explain the contributions of Langland to the English literature				
CO7	Describe the events associated with English Reformation and Counter-reformation				
CO8	The Renaissance of literature during Elizabethan and Stuart periods				
CO9	Understand King James Version of the Bible.				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Environmental studies	EN1121.1	Language Course 3	4	6 (Total 90)
Course Outcomes					
CO1	Understand the importance of environmental protection				
CO2	Classification of natural resources				
CO3	Explain the structure and function of eco system				
CO4	Illustrate Indian bio diversity				
CO5	Understand the effect of human population on environment				
CO6	Describe the different types of pollution				
CO7	Write down the methods for water conservation				
CO8	Understand the different acts for environment protection				
CO9	Recognize the role of an individual in preventing pollution				
CO10	Explain the role of Information Technology in Environment and Human health.				
CO11	Write down the methods for solid waste management				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Modern English grammar and Usage	EN1212.1	Language Course 3	3	4 (Total 72)
Course Outcomes					
CO1	Describe the grammar of spoken and written language				
CO2	Elements and classification of sentence				
CO3	Understand the different type of clauses and phrases				
CO4	Explain the different type of nouns and pro nouns				
CO5	Recognize the different type of verbs				
CO6	Describe the suitable use of prepositions and conjunctions				
CO7	Write down the elements of speech				
CO8	Write down the methods to minimize errors due to mother tongue influence				
CO9	Write down the functions of adverbs				
CO10	Understand précis writing				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Reading Drama	EN1241	Core Course 3	4	6 (Total 108)
Course Outcomes					
CO1	Understand the origin of drama				
CO2	Recognize the early forms of drama				
CO3	Compare the main dramatic genres Tragedy, Comedy and Tragi-Comedy				
CO4	Explain the different type of comedy				
CO5	Understand melodrama				
CO6	Differences between revenge tragedy and domestic tragedy				
CO7	Describe the important dramatic devices				
CO8	Critical analysis of "Julius Caesar"				
CO9	Literary significance of the works by J.M. Synge, Chekhov, Eugene O'Neill and M. Sajitha				
CO10	Identify the humor content in the play "Arms and the man"				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	History of English Literature II	EN1231	Complementary Course 3	3	3 (Total 54)
Course Outcomes					
CO1	Understand the rise of Puritanism and its impact on literature and social life				
CO2	The role of John Donne as a metaphysical poet				
CO3	Understand the rise of English theatre after restoration				
CO4	Compare the contributions of John Milton and John Bunyan				
CO5	Understand the effect of urbanization on literature				
CO6	The rise of modern science and the rise of capitalism				
CO7	Compare the works of neo-classical writers Pope, Dryden, Swift, Dr Johnson and Daniel Defoe				
CO8	Understand the basic tenets of the Romanticism				
CO9	Compare the contributions of the "Lake poets"				
CO10	Understand Imperialism and its effect on literature				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Writing and Presentation Skills	EN1331.1	Language Course 5	4	5 (Total 90)
Course Outcomes					
CO1	Understand the mechanism of writing				
CO2	Classification of writing				
CO3	Describe the components of writing process				
CO4	Identify the advantages of computer in writing				
CO5	Compare personal as well as formal letter writing				
CO6	Write down the components of a good CV				
CO7	Understand the writing style of a job application letter				
CO8	Understand the techniques behind summary writing, paraphrasing and note making				
CO9	Write down the components of a presentation				
CO10	Understand the method of seminar paper presentation using power point				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Reading Fiction	EN1341	Core Course III	3	4 (Total 72)
Course Outcomes					
CO1	Understand the different types of prose fiction				
CO2	Describe the elements of fiction				
CO3	Write down and explain different types of novels				
CO4	Compare the narrative strategies stream of consciousness and Meta fiction.				
CO5	Discuss about utopian and dystopian fiction				
CO6	Formal, structural and stylistic aspects of “Animal Farm”				
CO7	Critical analysis of Voltaire’s fiction “Candide”				
CO8	Compare modern British fiction and modern European fiction				
CO9	Explain the significance of the short stories “Romance of a Busy Broker”, “The Little Girl”, “The Red-headed League”, “The Family Man”and “Lawley Road”				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	20th Century Malayalam Literature in English Translations	EN1342	Core Course IV	4	5 (Total 90)
Course Outcomes					
CO1	Introduction of Malayalam literature after independence				
CO2	Understand the rise of Malayalam novel				
CO3	Recognize the romantic poets in malayalam				
CO4	Modern poets in Malayalam and the analysis of their literary works				
CO5	Discuss about Malayalam fiction in translation				
CO6	Understand the significance of "Indulekha" in Malayalam fiction				
CO7	Compare the works of M.T. Vasudevan Nair and Malayattoor Ramakrishnan				
CO8	Malayalam short story in English translation				
CO9	Describe the rise of Malayalam drama in the post independence period				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	History of English Literature III	EN1331	Complementary Course IV	3	3 (Total 54)
Course Outcomes					
CO1	Understand the Victorian age and the reform acts				
CO2	Industrialization and its impact on the society				
CO3	Rise of Oxford and Cambridge Universities				
CO4	Compare the works of the Victorian novelists				
CO5	Discuss the effect of the world wars I and II on society and literature				
CO6	Understand Post-modernism, Feminism and environmentalism.				
CO7	Understand Poetry, fiction and drama of 60s, 70s and 80s				
CO8	Outline the importance of the poem "The Movement"				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Readings in Literature	EN1411.1	Language Course IV	4	5 (Total 90)
Course Outcomes					
CO1	Understand the importance of literature				
CO2	Describe the creative use of language				
CO3	Write down the different types of poetry				
CO4	Understand the scope of drama				
CO5	Discuss the different types of drama				
CO6	Explain the structure of one act plays				
CO7	Discuss the characteristics of prose				
CO8	Understand the elements of fiction				
CO9	Analyze the best pieces of literary writing critically				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Reading Prose	EN1441	Core Course V	4	5 (Total 90)
Course Outcomes					
CO1	Understand the characteristics of essay				
CO2	Compare formal and informal essays				
CO3	The differences between periodical and critical essays				
CO4	Understand the methods of life writing				
CO5	Describe the benefits and effects of studies outlined in the essay “of studies”				
CO6	Critical analysis of the selected extract from Pepys’ Diaries				
CO7	Comment on the satire included in the essay “Sir Roger at the Assizes”				
CO8	Understand the Life of Samuel Johnson presented in the biography				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Informatics	EN1421	Foundation course II	3	4 (Total 72)
Course Outcomes					
CO1	Information about the types of computers				
CO2	Understand cyber ethics				
CO3	Information of cyber crimes like hacking and morphing				
CO4	Write down the basic hardware's of computer				
CO5	Explain the various input/output devices				
CO6	Describe the applications of word, excel and power point programs				
CO7	Understand the different file formats				
CO8	Computer virus and the various antivirus tools				
CO9	Compare LAN and WAN				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	History of English Language	EN1431	Complimentary course VII	2	3 (Total 54)
Course Outcomes					
CO1	Understand the descent of english language				
CO2	Celtic, Latin and Scandinavian influences on grammar				
CO3	Understand the influence of French on vocabulary				
CO4	Understand english dialects				
CO5	Contributions of Chaucer, Spenser, Shakespeare and Milton				
CO6	Describe the impact of Bible Translations on the English language				
CO7	General characteristics of modern english				
CO8	Development of Dictionaries				
CO9	Understand the elements of semantics				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Literary Criticism	EN1541	Core course VI	4	5 (Total 90)
Course Outcomes					
CO1	Nature of classical criticism				
CO2	Understand the contributions of Plato				
CO3	Explain the concepts of Aristotle				
CO4	Explain theory of Rasa, Vyanjana and Alankara				
CO5	The origin of Neo-Classical Criticism				
CO6	Understand the theory of poetry outlined in "Preface to Lyrical Ballads"				
CO7	Definition of poetry according to Coleridge				
CO8	Describe the importance of Touch stone method				
CO9	The concept of tradition presented in the essay "Tradition and Individual Talent"				
CO10	Understand IA Richards' Concept of Four Kinds of Meaning				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Indian Literature in English	EN1542	Core course VII	4	5 (Total 90)
Course Outcomes					
CO1	Introduction to Indian writing in English.				
CO2	Explain the Indianness in Indian literature in English				
CO3	Analyse the strength of Indian English as a literary medium				
CO4	Critical analysis of the poetic works of Henry Derozio, Sarojini Naidu, Aurobindo Nissim Ezekiel, Jayanta Mahapatra, Rabindranath Tagore and Harindranath Chattopadhyaya				
CO5	Analyse the constraints of Indian English as a literary medium				
CO6	Critical analysis of the essay "Ajanta and Ellora in the Monsoon".				
CO7	Understand the vision of freedom presented in the essay "A Tryst with Destiny"				
CO8	Explain the social criticism revealed in the novel "*Ancient Promises"*				
CO9	Analysis of the drama "*Hayavadana"* by Girish Karnad				
CO10	Analyze the anthology of short stories by famous Indian authors				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Film Studies	EN1543	Core course VIII	2	3 (Total 54)
Course Outcomes					
CO1	Understand the language of cinema				
CO2	Explain the various film movements				
CO3	Understand classical Hollywood cinema and genre				
CO4	Entry of Phalke and the desi enterprise				
CO5	Understand the History of Malayalam Cinema				
CO6	Narrative structure and strategies in film and fiction				
CO7	Compare the language of cinema with literary language				
CO8	Review of the films Rashomon, My Fair Lady And Chemmeen				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Indian Literature in English	EN1542	Core course VII	4	5 (Total 90)
Course Outcomes					
CO1	Introduction to Indian writing in English.				
CO2	Explain the Indianness in Indian literature in English				
CO3	Analyse the strength of Indian English as a literary medium				
CO4	Critical analysis of the poetic works of Henry Derozio, Sarojini Naidu, Aurobindo Nissim Ezekiel, Jayanta Mahapatra, Rabindranath Tagore and Harindranath Chattopadhyaya				
CO5	Analyse the constraints of Indian English as a literary medium				
CO6	Critical analysis of the essay “Ajanta and Ellora in the Monsoon”.				
CO7	Understand the vision of freedom presented in the essay “A Tryst with Destiny”				
CO8	Explain the social criticism revealed in the novel “*Ancient Promises”*				
CO9	Analysis of the drama “*Hayavadana”* by Girish Karnad				
CO10	Analyze the anthology of short stories by famous Indian authors				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Linguistics & Phonetics	EN1544	Core course IX	4	4 (Total 72)
Course Outcomes					
CO1	Understand the branches of linguistics				
CO2	Compare different approaches to the study of language				
CO3	Discussion on langue & parole				
CO4	Differences between traditional & structural grammar				
CO5	Understand Received pronunciation and BBC English.				
CO6	Discuss Phonetics and articulatory phonetics				
CO7	Describe the classification of speech sounds				
CO8	Explain syllable structure				
CO9	Understand the Karaka Theory of The Indian Grammarians				
CO10	Outline the contributions of Patanjali and Bhartrhari				
CO11	Understand Morphemes and their classification				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Post colonial Literature in English	EN1545	Core course X	4	5 (Total 90)
Course Outcomes					
CO1	Identify what is distinctly Post Colonial literature				
CO2	Introduction to Post Colonial life and culture				
CO3	Understand the works of distinguished writers of postcolonial literature in English				
CO4	Explain the varying modes of literary expression associated with post colonial culture				
CO5	The literary significance of the tragedy “The Strong Breed”				
CO6	Analyze the critical social history of America presented in “The Great Gatsby”				
CO7	Literary backdrop of the fiction “Chronicle of a Death Foretold”				
CO8	The power of the environment portrayed in the poem “Train Journey” by Judith Wright				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Communicative Applications in English	EN1551.1	Open course	2	3 (Total 54)
Course Outcomes					
CO1	Understand the varieties of modern English				
CO2	Write down the components of syllable				
CO3	Understand the basic techniques of conversation				
CO4	The proper use of language while attending interview or group discussion				
CO5	Describe the importance of non verbal communication				
CO6	Compare Skimming and scanning				
CO7	Understand the practice of preparing agenda and minutes				
CO8	Compare Scientific writing and business writing				
CO9	Write down the most common idioms in English				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	World Classics	EN1641	Core course XI	4	5 (Total 90)
Course Outcomes					
CO1	Understand the definition of classics				
CO2	Write down the qualities of classic literature				
CO3	Understand the contributions of Homer and Sophocles				
CO4	Evaluation of Sanskrit and Italian classics				
CO5	Analyze the classics of Virgil, Aeschylus, Euripides, Aristophanes and Nikos Kazantzakis				
CO6	Compare Russian and German classics				
CO7	Explain the harmonious relation between man and nature portrayed in “Ritusamhara”.				
CO8	Understand the tragic elements presented through the drama “Antigone”				
CO9	Critical reading of the Tolstoy masterpiece “The Death of Ivan Ilyich”				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Methodology and Perspectives of Humanities	EN1642	Core course XII	4	5 (Total 90)
Course Outcomes					
CO1	Introduction to humanities				
CO2	Understand the differences between Natural science and Humanities				
CO3	Compare the disciplines of social science and Humanities				
CO4	Understand the objectivity of science and the subjectivity of the humanities				
CO5	State the Impact of society on literature				
CO6	Idea of literary canon				
CO7	Introduction to Philology and the fundamentals				
CO8	Understand the basics of rhetoric approach				
CO9	Outline the common features of stylistics approach				
CO10	Explain the important semiotic terms				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	English for the media	EN1643	Core course XIII	4	5 (Total 90)
Course Outcomes					
CO1	Understand the nature, characteristics and purpose of main-stream media				
CO2	Information on the cohesion techniques				
CO3	Understand the principle of “Answer the five Ws and H”				
CO4	Describe the application of “The inverted pyramid style”				
CO5	Explain the art of questioning and its overall philosophy				
CO6	Understand the house styles of leading newspapers				
CO7	Recognize the importance of voice, diction, delivery and language of DJ or a Presenter				
CO8	Understand the process of editing a T.V. Documentary				
CO9	Write down the essential conditions for creating a good blog				
CO10	Understand the key elements of high-quality advertising				
CO11	Compare the language of old advertisements and new advertisements				
CO12	Summarize the rules of writing news for the web				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Women's Writings	EN1644	Core course XIII	3	4 (Total 72)
Course Outcomes					
CO1	Familiarize the diverse concerns addressed by feminism				
CO2	Learn Virginia Woolf's essay "Shakespeare and his Sister"				
CO3	Understanding of womanist theory from the essay "In Search of our Mothers' Gardens"				
CO4	The nature of questioning and the search for space in Indian Women's writing from "Writing Women Across Cultures"				
CO5	Understand the writing style of Sylvia Plath through the poem "Lady Lazarus"				
CO6	Describe the characteristics of men and women portrayed in "Woman"				
CO7	Critical value of the short fictions by Katherine Mansfield, Shashi Deshpande, Sara Joseph and Amy Tan				
CO8	Read and analyze Sheila Walsh's drama "Molly and James"				
CO9	Understand the concerns and voices of women in "The Swing of Desire"				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Translation studies	EN1661.1	Elective course	2	3 (Total 54)
Course Outcomes					
CO1	Understand the history of translation in Malayalam				
CO2	Describe the theories of translation				
CO3	Compare Literary and Non-Literary translation				
CO4	Information on technology aided translation				
CO5	Understand the concept "afterlife" of an original literary work				
CO6	Practice translation of a Malayalam poem or story to English and vice-versa				
CO7	Practice translation of sentences and passages from English to Malayalam and vice–versa				
CO8	Practice translation of short literary prose pieces including fiction from English to Malayalam and vice versa				

COURSE OUTCOMES FOR BA ECONOMICS

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Introductory Microeconomics	EC1141	Core course 1	4	6 (Total 90)
Course Outcomes					
CO1	Understand the conceptual foundation and analytical methods used in Microeconomics				
CO2	Information on Labour and production				
CO3	Explain Demand, Supply and Market Mechanism				
CO4	Understand the Technology of Production				
CO5	Information on Competitive Markets				
CO6	Understand Industry's Long Run Supply Curve				
CO7	Describe Monopoly-Average Revenue and Marginal Revenue				
CO8	Understand Monopoly power				
CO9	Compare Monopsony and Monopoly				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Intermediate Microeconomics	EC1241	Core course II	4	6 (Total 90)
Course Outcomes					
CO1	Understand the basic concepts of Micro Economics				
CO2	Compare Stocks vs Flows				
CO3	Explain how are interest rates determined				
CO4	Compare Risk vs Uncertainty in economics				
CO5	Information on the importance of Behavioural Economics				
CO6	Introduction to Game theory in Economics				
CO7	Understand the relevance of Pareto Criterion				
CO8	Understand the Pareto efficiency curve and the distribution of the surplus				
CO9	Information on General Equilibrium and Economic Efficiency				
CO10	Understand the ways to correct Market failure				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Informatics for Applied Econometrics	EC1321	Foundation course	3	4 (Total 70)
Course Outcomes					
CO1	Understand the scope of Informatics				
CO2	Information on INFLIBNET, NICNET and E-Books				
CO3	Introduction to Massive Open Online Courses				
CO4	Understand the Methodology of Econometrics				
CO5	Information on the Statistical Software for social science Research				
CO6	Understand the concept of Population Regression Function (PRF)				
CO7	The importance of Sample Regression Function (SRF)				
CO8	Understand the Classical Linear Regression Model				
CO9	The relevance of Gauss Markov theorem				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Introductory Macroeconomics	EC1341	Core course III	4	5 (Total 72)
Course Outcomes					
CO1	Introduction to Macroeconomics				
CO2	Understand the concepts of GDP				
CO3	Introduction to money and wealth				
CO4	Understand the business of banking				
CO5	Information on credit card constraints				
CO6	Understand the multiplier process and model				
CO7	Information on the fiscal policy of government				
CO8	The Money Market and the LM Curve				
CO9	Analysis of Fiscal and monetary policy				
CO10	Comparison of Crowding in and crowding out				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Mathematical Methods for Economics	EC1441	Core course IV	4	5 (Total 90)
Course Outcomes					
CO1	Understand the role of Mathematics in Economics				
CO2	Introduction to Algebraic Functions				
CO3	Provide knowledge of Linear, Quadratic and simultaneous equations and their Solutions				
CO4	Introduction to Co-ordinate Geometry, Graphs, Slopes and Intercept				
CO5	Explain Economic applications of Differential calculus				
CO6	Describe the importance of Marginal Concepts				
CO7	Understand the Rules of Integrals				
CO8	Economic Applications of Integral Calculus				
CO9	Introduction to basic matrix algebra for economics				
CO10	Describe the application of Cramer's rule				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Intermediate Macroeconomics	EC1442	Core course V	3	4 (Total 72)
Course Outcomes					
CO1	Introduction to Open Economy Macroeconomics				
CO2	Information on the Aggregate Supply Curve and the Price Adjustment Mechanism				
CO3	Understanding of Inflation, Unemployment and augmented Phillips Curve				
CO4	Analysis of the Wage-Unemployment Relationship:				
CO5	Explain the Solow model of economic growth				
CO6	Understand the key concepts of Endogenous growth theory				
CO7	Describe the Life-Cycle hypothesis of consumption				
CO8	Information on the Stock Demand for Capital and the Flow of Investment				
CO9	Understand the Components of the Money Stock and the Functions of Money				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Methodology and Perspectives of Social Science	EC1541	Core course VI	4	4 (Total 75)
Course Outcomes					
CO1	Understand the need for interdisciplinary approach in social science				
CO2	Compare objectivity and subjectivity in social Science				
CO3	Introduction to the economic issues				
CO4	Understand the various economic systems				
CO5	Analysis of Positive and normative economics				
CO6	Information on Capitalism as an economic system				
CO7	Information on Industrial Revolution and incentives for new technology				
CO8	Analysis of Global financial crisis				
CO9	Understand the effects of Globalization				
CO10	Introduction to the Economics of environment				
CO11	Information on Intellectual Property Rights				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Statistical Methods for Economics	EC1542	Core course VII	4	4 (Total 97)
Course Outcomes					
CO1	Introduction to Univariate analysis				
CO2	Comparison of Simple, Partial and Multiple correlation				
CO3	Analysis of Karl Pearson’s coefficient of correlation and Spearman’s rank correlation				
CO4	Understand the uses of regression in Economics				
CO5	Information on Time series analysis				
CO6	Understand the meaning and types of Index numbers				
CO7	Analyze the problems in the construction of index numbers				
CO8	Understand the elements of probability theory				
CO9	Compare Classical and Modern, Relative frequency definition and Axiomatic approach of probability				
CO10	Compare Addition theorem and multiplication theorem of probability				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Readings in Political Economy	EC1543	Core course VIII	4	4 (Total 75)
Course Outcomes					
CO1	Understand the Adam smith's concept of Division of Labour				
CO2	Understand the Ricardian theory of rent and machinery				
CO3	Marx comparison of CMC and MCM				
CO4	Comparison of the different perspectives of political economy by Adam Smith and John Maynard Keynes				
CO5	Comparison of the different perspectives of political economy by Thorstein Veblen and Joseph Schumpeter				
CO6	Information on the recent Crisis in Global Capitalism				
CO7	Understand the role of Gender equality and Women's empowerment in economic development				
CO8	Analysis of "Social justice through affirmative action in India" by Ashwini Deshpande				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Economic Growth and Development	EC1544	Core course IX	2	3 (Total 70)
Course Outcomes					
CO1	Understand basic concepts of Economic Growth and Development				
CO2	Information on the Measurement of Poverty – absolute and relative				
CO3	Discuss Sen's Capabilities approach				
CO4	Understand Kuznet's inverted U Hypothesis and Lorenz Curve				
CO5	Information the various models of economic growth				
CO6	Compare Rostow's Stages of Growth and the Vicious Circle of Poverty				
CO7	Understand Lewis Theory of Unlimited Supply of Labour and Nurk's Theory of Disguised Unemployment				
CO8	Compare the Big Push Theory and the Dualistic Theories				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	International Economics	EC1545	Core Course X	3	4 (Total 90)
Course Outcomes					
CO1	Understand basics of International Economics				
CO2	Compare Mercantilism and Physiocrats theories of economics				
CO3	Explain the concept Leontief Paradox				
CO4	Describe the components of Balance of Payments				
CO5	Understand Marshall –Lerner condition and J Curve effect				
CO6	Information on the exchange rate determination				
CO7	Understand the risks associated with foreign exchange				
CO8	Information on the Commercial Policy- Free Trade and Protection				
CO9	Understand the theorems on Tariff and Income Distribution				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Human Resource Management	EC1551.2	Open Course I	2	3 (Total 54)
Course Outcomes					
CO1	Understand the objectives, scope and functions of HRM				
CO2	Describe the role of HRM in the emerging economic scenario				
CO3	Understand the Role of HR managers				
CO4	Compare HRD and HRM				
CO5	Information on the objectives and limitations of Human resource planning				
CO6	Explain the different recruitment and training methods of employees				
CO7	Understand the disciplinary action procedure				
CO8	Information on the idea of Industrial Democracy				
CO9	Understand the Workers' Participation in Management in India				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Indian Economy	EC1641	Core course XI	4	5 (Total 90)
Course Outcomes					
CO1	Understand the changes in Major Demographic Indicators post-independence				
CO2	Information on inflation – trends, reasons and measures				
CO3	Discussion about Urbanization – trends and issues				
CO4	Explain the New Agriculture policy				
CO5	Understand the concept of Poverty and Poverty Line				
CO6	Discuss about the labour laws in India				
CO7	Information on Trade and Currency Reforms				
CO8	Understand the role of Agriculture in Indian Economy				
CO9	Information on Services sector - Importance and composition				
CO10	Role of international oil and gold prices in Indian economy				
CO11	Understand the Indian Economic Reforms since 1991				
CO12	Analyze the Impacts of GST and demonetization				
CO13	Understand the Impact of Digital economy				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Banking and Finance	EC1642	Core Course XII	4	4 (Total 100)
Course Outcomes					
CO1	Describe the Financial system, Structure and Functions				
CO2	Understand the relation between Financial system and Economic development				
CO3	Discuss the targets of monetary policy				
CO4	Understand Financial Sector Reforms				
CO5	Introduction to Indian Banking System				
CO6	Understand Narasimham Committee report on banking sector reforms				
CO7	Explain the features of Indian Money market				
CO8	Analyze the Components of Capital market				
CO9	Discuss the use of the CAPM model in investment analysis and as a pricing formula.				
CO10	Information on the Organization and management of SEBI, BSE and NSE				
CO11	Understand the relevance of SENSEX and Nifty				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Public Economics	EC1643	Core course XII	4	5 (Total 85)
Course Outcomes					
CO1	Understand the scope of Public economics				
CO2	Describe the similarities and dissimilarities between Public and Private finance				
CO3	Understanding on the basic fiscal policy instruments				
CO4	Describe the classification of public revenue				
CO5	Explain the canons and principles of taxation				
CO6	Information on the different type of taxes				
CO7	Understand the theories of tax shifting and incidence				
CO8	Information on Public debt management				
CO9	Point out the reasons for growth in India's public expenditure.				
CO10	Objectives, types and sources of public debt				
CO11	The Concept, significance and characteristics of Budget				
CO12	Describe Budgetary deficits and its implications				
CO13	Understand Fiscal Policy- meaning and objectives				
CO14	Information on Fiscal Imbalance and Types				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Environmental Economics and Disaster Management	EC1644	Core course XIII	3	4 (Total 55)
Course Outcomes					
CO1	Understand the basic Concepts of environmental economics				
CO2	Information on Market system and environment of externalities				
CO3	Explain Property rights and the Coase theorem				
CO4	Information on Pigouvian Taxes and Effluent Charges				
CO5	Understand the types of Economic Values				
CO6	Analysis of Global Environmental Issues				
CO7	Information on the Hazard and Vulnerability Profile of India				
CO8	Analyze the Disaster management in India				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Kerala Economy	EC1661.1	Elective course	2	4 (Total 56)
Course Outcomes					
CO1	Understand the features of Kerala economy				
CO2	Describe Kerala Model of Development				
CO3	Understand why sex ratio is in favour of women in Kerala				
CO4	Analyze the Economic and social Impacts of Migration, return migration and interstate migration				
CO5	Information on the major poverty alleviation schemes in Kerala				
CO6	Explain the recent Trends in Agricultural Growth				
CO7	Understand the prospects of small scale industries in Kerala				
CO8	Discuss the need for organic farming and organic farming initiatives				
CO9	Understand the reasons behind the Industrial backwardness of Kerala				
CO10	Explain the role and importance of service sector in Kerala				

COURSE OUTCOMES FOR BSC PHYSICS

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Basic Mechanics &Properties of Matter	PY1141	Core course 1	2	2 (Total 36)
Course Outcomes					
CO1	Understand the theorems on moment of inertia (M.I)				
CO2	Describe the calculation of M.I of bodies of regular shapes				
CO3	Explain Work Energy theorem				
CO4	Compare the different types of friction				
CO5	Understand the fundamentals of Simple harmonic motion				
CO6	Information on Acoustics and Factors affecting acoustics of buildings				
CO7	Explain the characteristics of elasticity				
CO8	Understand Poisson'sratio and its significance				
CO9	Describe Surface tension and methods for its determination				
CO10	Compare Streamline and turbulent flow				
CO11	Understand the applications of Bernoulli's theorem				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Heat and Thermodynamics	PY1241	Foundation course	2	2 (Total 36)
Course Outcomes					
CO1	Discuss the measurement of Thermal conductivity by Lee's Disc method				
CO2	Compare Weidman-Franz law and Stefan's law				
CO3	Understand Zeroth Law & First law of Thermodynamics				
CO4	Compare Reversible and irreversible processes				
CO5	Understand the relevance of Carnot engine-working and efficiency				
CO6	Explain the change of entropy in reversible and irreversible cycle				
CO7	Understand Nernst theorem and third law of thermodynamics				
CO8	Phase transition and application of Clausius-Clapeyron Equation				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Electrodynamics	PY1341	Core course II	3	3 (Total 54)
Course Outcomes					
CO1	Introduction to potential, Poisson's and Laplace's equations				
CO2	Understand Polarization, Dielectrics and induced dipoles				
CO3	Information on magnetic flux and Gauss's law for magnetic fields				
CO4	Discuss electromagnetic induction, Faraday's law and Maxwell's Equations				
CO5	Explain the wave equation, energy and momentum of electromagnetic waves				
CO6	Information on the growth and decay of current in LR and CR circuits				
CO7	Describe the charging and discharging of a capacitor through LCR circuit				
CO8	Understand the fundamentals of alternating current				
CO9	Discuss the applications of Ampere's circuital law.				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Classical and Relativistic Mechanics	PY1441	Core course III	3	3 (Total 54)
Course Outcomes					
CO1	Introduction to Particle dynamics				
CO2	Discuss about conservation laws				
CO3	Understand Kepler's laws of planetary motion and their deduction				
CO4	Information on Conservation of momentum and its application				
CO5	Explain the applications of Lagrange's equation in simple pendulum				
CO6	Comparison of Lagrangian approach with Newtonian approach				
CO7	Introduction to the basic concepts of Hamiltonian Dynamics				
CO8	Understand the Origin and significance of special theory of relativity				
CO9	How does theory of relativity resolve the Twin-Paradox?				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Quantum Mechanics	PY1541	Core course IV	4	4 (Total 72)
Course Outcomes					
CO1	Understand photoelectric effect and Compton effect				
CO2	Discuss the properties of wave function				
CO3	Understand Time dependent Schrodinger equation and Time independent Schrodinger equation				
CO4	Explain the Statistical Interpretation of Wave function				
CO5	Describe the application of Uncertainty principle				
CO6	Discuss the concept of infinite square well and finite square well				
CO7	Derive the Schrodinger wave equation for the Harmonic oscillator				
CO8	Understand the significance of Hermitian operator				
CO9	Describe the correspondence principle				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Statistical Physics, Research, Methodolgy and Disaster Management	PY1542	Core course V	4	4 (Total 72)
Course Outcomes					
CO1	Understand Maxwell Boltzmann distribution				
CO2	Comparison of Bose Einstein and Fermi Dirac statistics				
CO3	Explain the different types of research approaches				
CO4	Information on Thesis/ Report writing				
CO5	Describe the importance of estimating and reporting of errors				
CO6	Information of Global natural disasters				
CO7	Understand the Impact of global climate change and major natural disasters				
CO8	Information on the progress in research of earthquake disaster				
CO9	Explain the measures for controlling communicable diseases and epidemics				
CO10	Understand the health consequences of radiation				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Electronics	PY1543	Core course VI	4	4 (Total 72)
Course Outcomes					
CO1	Discuss diode characteristics				
CO2	Explain the different types of filters				
CO3	Understand the breakdown mechanism in diodes				
CO4	Difference between CB, CE, CC transistor configurations				
CO5	Compare Thevenin's and Norton's circuit analysis theorems				
CO6	Discuss about various Amplifier classes and efficiency				
CO7	Comparison of positive and negative feed back				
CO8	Understand the Fundamentals of modulation				
CO9	Basic construction and Theory of operation of Junction Field Effect Transistor				
CO10	Construction and working of MOSFET				
CO11	Application of virtual ground principle				
CO12	Discuss about Operational amplifiers				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Atomic and Molecular Physics	PY1544	Core course VII	4	4 (Total 72)
Course Outcomes					
CO1	Understand photoelectric effect and Compton effect				
CO2	Compare Bohr atom model and Ruther ford planetary model				
CO3	Derive Schrödinger equation and explain the statistical interpretation				
CO4	Explain the significance of the uncertainty principle				
CO5	Write down the postulates of quantum mechanics				
CO6	Discuss the concept of infinite square well and finite square well				
CO7	Explain function spaces in linear algebra				
CO8	Understand the generalized statistical interpretation of quantum mechanics				
CO9	Describe the correspondence principle				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Electronics	PY1543	Core course VII	4	4 (Total 72)
Course Outcomes					
CO1	Discuss diode characteristics				
CO2	Explain the different types of filters				
CO3	Understand the breakdown mechanism in diodes				
CO4	Difference between CB,CE,CC transistor configurations				
CO5	Understand the Theory of A bipolar junction transistor operation				
CO6	Discuss various Amplifier classes and efficiency				
CO7	Comparison of positive and negative feed back				
CO8	Understand the Fundamentals of modulation				
CO9	Basic construction and Theory of operation of Field Effect Transistor				
CO10	Application of virtual ground principle				
CO11	Discuss about Operational amplifiers				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Atomic and Molecular Physics	PY1544	Core course VII	4	4 (Total 72)
Course Outcomes					
CO1	Discuss Somerfield’s atom model and explanation of fine structure of H atom				
CO2	Understand the application of spatial quantization				
CO3	Explain the significance of Pauli's exclusion principle				
CO4	Compare selection rules, intensity rule and interval rule				
CO5	Provide quantum mechanical explanation of normal Zeeman effect				
CO6	Compare Paschen-Back effect and Stark effect				
CO7	Understand the production and properties of X-rays				
CO8	Explain the rotational spectra of diatomic molecules				
CO9	Illustrate Frank-Condon principle				
CO10	Describe Raman scattering and quantum theory of Raman scattering				
CO11	Principle and applications of NMR spectroscopy				
CO12	Principle and applications of ESR spectroscopy				
CO13	Principle and applications Mossbauer spectroscopy				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Astronomy & Astrophysics	PY1551.2	Open course I	2	3 (Total 54)
Course Outcomes					
CO1	Understand the Importance of Astronomy				
CO2	Discuss Ptolemy's model of Universe				
CO3	Explain the Laws of planetary motion				
CO4	Understand the formation of solar system				
CO5	Information on Satellites, Asteroid belt, Kuiper belt, Comets and Meteorites				
CO6	Discuss the motion of the Earth and the formation of Seasons				
CO7	Discuss the properties of stars and types of galaxies				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Solid State Physics	PY1641	Core course VIII	4	4 (Total 72)
Course Outcomes					
CO1	Discuss fourteen Bravais lattices and seven crystal systems				
CO2	Understand the calculation of Miller indices				
CO3	Explanation of metallic conduction based on free electron model				
CO4	Introduction-generation and absorption of X-rays and Bragg's law				
CO5	Understand the effects of the Fermi surface				
CO6	Describe Hall effect and magneto resistance				
CO7	Explain Bloch theorem and the Kronig -Penney model				
CO8	Compare paramagnetism, antiferromagnetism and ferromagnetism				
CO9	Discuss Dielectric and Optical properties of materials				
CO10	Understand the theory of superconductivity				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Nuclear & Particle Physics	PY1642	Core course IX	4	4 (Total 72)
Course Outcomes					
CO1	Describe various models of nuclear structure-The liquid drop model, shell model and collective model				
CO2	Understand the fundamentals of radio activity				
CO3	Explain Geiger-Nuttal law and Gamow's theory				
CO4	Write down the applications of radioisotopes				
CO5	Understand the meson theory of nuclear forces.				
CO6	Describe Nuclear radiation detectors and particle accelerators				
CO7	Explain the significance of the Q value equation for a nuclear reaction				
CO8	Compare Nuclear fission and fusion				
CO9	Information on nuclear reactors, breeder reactors and nuclear power in India				
CO10	Understand lepton conservation and Baryon conservation laws				
CO11	Describe Bremsstrahlung effect and Cerenkov radiations				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Classical & Modern Optics	PY1643	Core course X	4	4 (Total 72)
Course Outcomes					
CO1	Understand the fundamentals of Interference of light				
CO2	Explain the working of Michelson interferometer				
CO3	Compare Fresnel diffraction Fraunhofer diffraction				
CO4	Describe Rayleigh's criterion for resolution				
CO5	Discuss the significance of Brewster's law and Malus law				
CO6	Understand the theory of production and analysis of plane, circularly and elliptically polarized light				
CO7	Describe Cauchy's and Hartmann dispersion formula				
CO8	Write down the advantages of fiber optic communication system				
CO9	Understand the Principle of holography and its application				
CO10	Explain the basic principle, types and applications of Laser				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Digital electronics and Computer science	PY1644	Core course XI	4	4 (Total 72)
Course Outcomes					
CO1	Understand the Decimal number system and binary number system				
CO2	Information on the conversion of real numbers to binary				
CO3	Discuss logic gates AND, OR, NOT, NAND and NOR				
CO4	Explain Boolean laws and Demorgan's theorem				
CO5	Compare Arithmetic circuits and sequential circuits				
CO6	Understand the basics of computers				
CO7	Discuss the importance and basic structure of C program				
CO8	Describe the different statements in C-simple IF statement-IF ELSE statement-nested IF ELSE-SWITCH statement and GOTO statement				
CO9	The application of Simple C programs for solving problems in physics				
CO10	Introduction to microprocessors				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Nanoscience and Technology	PY1661.4	Elective course	2	3 (Total 54)
Course Outcomes					
CO1	Understand the scope and applications Nanoscience and nanotechnology				
CO2	Information on the Electrical Transport in Nanostructure				
CO3	Application of Quantum Mechanics to Nanoscience				
CO4	Explain the various Top down vs bottom up techniques for the production of nanoparticles				
CO5	Understand the Methods for the characterization of nano materials like XRD, TEM, SEM, AFM, STM				
CO6	Understand the structure and applications of various Fullerenes				
CO7	Write down the applications of carbon nanotubes				

COURSE OUTCOMES FOR BSC CHEMISTRY

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Inorganic Chemistry I	CH1141	Core course 1	2	2 (Total 36)
Course Outcomes					
CO1	Introduction to atomic structure, concept of dual nature of electron and de Broglie equation				
CO2	Describe the experimental verification of de Broglie relation and the importance of Heisenberg's uncertainty principle				
CO3	Explain the Wave mechanical concept of the atom and Schrodinger equation				
CO4	Derivation of Schrodinger wave equation for particle in a one-dimensional box and three-dimensional box.				
CO5	Understand the basics of Quantum numbers, Pauli's exclusion Principle, Aufbau Principle and Hund's rule				
CO6	Describe the classification of elements into s, p, d, f blocks				
CO7	Explain the Properties, methods of preparation and applications of hydrogen				
CO8	Understand the basics of SHAB principle				
CO9	Understand the reactions in non-aqueous solvents				
CO10	Discuss about the Major air pollutants				
CO11	Describe the classification of water pollutants				
CO12	Information on the treatment of industrial waste water: Importance of BOD and COD				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Methodology and Perspectives of Sciences and General Informatics	CH1221	Foundation course 1	2	2 (Total 36)
Course Outcomes					
CO1	Describe the revolutions in science				
CO2	Discuss the design and documentation of experiments				
CO3	Information on the methods of knowledge transfer				
CO3	Understand the various components of research				
CO4	Explain the evolution of Chemistry as a discipline of science and understand the contribution of various scientists				
CO5	Basic ideas of interdisciplinary areas involving chemistry				
CO6	Understand the features of the modern personal computer and peripherals				
CO7	Introduction to use of IT in teaching and learning and the idea of educational soft wares				
CO8	Discuss the basic concepts of IPR, copy right and patents				
CO9	Describe the basics and applications of cheminformatics				
CO10	Information on Gravimetric Analysis & Safety measures in Laboratory				
CO11	Understand the basics of Inorganic qualitative analysis, Quantitative Analysis and Chromatography				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Inorganic Chemistry II	CH1341	Core course II	3	3 (Total 54)
Course Outcomes					
CO1	Describe the different theories of bonding				
CO2	Explain VSEPR theory and understand the concept of hybridization				
CO3	Understand the salient features of Molecular orbital theory				
CO3	Describe the calculation of Lattice energy by Born-Haber Cycle and Born-Lande equation				
CO4	Compare the various theories of Metallic bonding				
CO5	Information on the different types of glasses, Silicates, Zeolites and Silicones.				
CO6	Information on boron compounds as well as the oxides and oxyacids of phosphorous				
CO7	Understand the preparation and structure of oxides and oxyacids of halogens and Information on the inorganic polymers based on Phosphorus, boron and silicon				
CO8	Understand the basics of Nuclear chemistry				
CO9	Discuss the preparation, properties and applications of nano particles				
Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Organic Chemistry	CH1441	Core course III	3	3 (Total 54)
Course Outcomes					
CO1	Understand the classification of organic reactions				
CO2	Explain the formation, properties and reactions of carbocations, carbanions, free radicals, carbenes and benzynes				
CO3	Describe the various displacement effects				
CO4	Discuss the mechanism of SN1, SN2 and SNi reactions				
CO5	Information on the mechanisms of E1, E2 reactions and the applications of Hoffmann and Saytzeff rules				
CO6	Understand Markownikoff's rule and peroxide effect				
CO7	Discuss the mechanism of aromatic electrophilic substitution in benzene				
CO8	Aromaticity, Huckel's rule and Nonbenzenoid aromatic compounds				
CO9	Representation of organic molecules: Fischer, Flying wedge, Sawhorse and Newman projection formulae				
CO10	Information on various organic photochemical reactions and Dyes				
CO11	Understand the basics of Racemization, Asymmetric synthesis and Resolution				
CO12	Information on Cahn-Ingold-Prelog rules and R-S notations				
CO13	Conformational analysis of ethane, n-butane and cyclohexane				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Physical Chemistry I	CH1541	Core course IV	4	3 (Total 54)
Course Outcomes					
CO1	Derivation and importance of Vander Waal's equation of state and Virial equation of state				
CO2	Describe the types of molecular velocities and their inter relations				
CO3	Deduce the relation between critical constants and van der Waals constants.				
CO4	Discuss the X-ray diffraction studies of crystals and the derivation of Bragg's equation				
CO5	Compare Schottky and Frenkel defects				
CO6	Surface tension and its measurement by capillary rise and stalagmometer method				
CO7	Understand the various colligative properties				
CO8	Describe the determination of molecular mass of solutes by Beckmann's method, Rast's method and cooling curve method				
CO9	Mathematical statement of first law of thermodynamics, reversible process and maximum work				
CO10	Explain Joule-Thomson effect and the derivation of the expression for Joule-Thomson coefficient.				
CO11	Discuss the applications of Hess's law				
CO12	Describe Carnot cycle and its efficiency				
CO13	Compare Gibbs-Helmholtz equation Gibbs-Duhem equation				
CO14	Understand the importance of symmetry elements, Point groups and the construction of Group multiplication table of C_{2V}				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Inorganic Chemistry III	CH1542	Core course V	4	4 (Total 72)
Course Outcomes					
CO1	Understand the characteristics of Transition and inner transition elements				
CO2	Compare the properties of Lanthanides and actinides				
CO3	Describe the Isomerism exhibited by complexes				
CO4	Compare valance bond theory and Crystal field theory of complexes				
CO5	Understand the role of organometallic compounds in organic synthesis				
CO6	A detailed understanding of the classification of several organometallic reactions				
CO7	Information on the various Instrumental methods of analysis				
CO8	Understand the general principles of isolation of elements				
CO9	Discuss the applications of Hess's law				
CO10	Explain Carnot cycle, its efficiency and its significance				
CO11	Compare Gibbs-Helmholtz equation Gibbs-Duhem equation				
CO12	Understand the concept symmetry operations, point groups and the construction of Group multiplication table of C2V				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Organic Chemistry II	CH1543	Core course VI	4	4 (Total 72)
Course Outcomes					
CO1	The structure and reactivity of Alcohols, Ethers and Phenols				
CO2	Explain the mechanism of Pinacol-Pinacolone rearrangement				
CO3	Mechanisms of Reimer –Tiemann reaction and Fries rearrangement				
CO4	Compare the structure and reactivity of the aldehydes and ketones				
CO5	Describe $LiAlH_4$ and $NaBH_4$ mediated reductions				
CO6	Explain the mechanism of Beckmann rearrangement				
CO7	Understand the preparation and properties of carboxylic acids and their derivatives				
CO8	Discuss the preparation, properties of various organic nitrogen compounds				
CO9	Understand the basic concepts of UV-VIS spectroscopy, IR spectroscopy and Mass spectroscopy				
CO10	Understand the structural elucidation of simple organic molecules using IR and NMR spectroscopic techniques.				
CO11	Introduction to Supramolecular chemistry and Green Chemistry				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Essentials of Chemistry	CH1551.1	Open course I	2	3 (Total 54)
Course Outcomes					
CO1	Understand the Atomic structure and Periodic Classification of Elements				
CO2	Compare Nuclear fission and Nuclear fusion				
CO3	Describe the application of Rock dating and Radio carbon dating				
CO4	Structure, classification, synthesis and application of common polymers				
CO5	Understand the characteristics and functions of Hormones, vitamins and enzymes				
CO6	Discuss the application of chemistry in life: Various Drugs, dyes, detergents and explosives				
CO7	Discuss about the different types of pollution				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Physical Chemistry II	CH1641	Core course VII	4	4 (Total 72)
Course Outcomes					
CO1	Explain Nernst heat theorem, its proof and consequences.				
CO2	Discuss Thermodynamic functions in terms of partition functions				
CO3	Describe the classification, purification and properties of colloids				
CO4	Understand different adsorption isotherms and applications of adsorption				
CO5	Describe Plank's quantum theory and explanation of the radiation phenomena				
CO6	Discuss the Application of quantum mechanics to particle in 1 D box and particle in 3 D box.				
CO7	Explain microwave spectra of diatomic molecules				
CO8	Understand the principles of IR spectra of diatomic molecules				
CO9	Describe the principle and applications of Raman spectroscopy				
CO10	Discuss Electronic spectroscopy and Frank-Condon principle.				
CO11	Compare the basic features of NMR and ESR				
CO12	Application of the various non spectroscopic methods for structure elucidaiton				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Organic Chemistry III	CH1642	Core course VIII	4	4 (Total 54)
Course Outcomes					
CO1	Understand the reactions and structure of carbohydrates				
CO2	Information on Heterocyclic compounds – classification – nomenclature – aromaticity.				
CO3	Understand the Classification and uses of drugs				
CO4	Information on the Classification, structure and stereochemistry of anino acids				
CO5	Describe the Classification and structure of proteins and nucleic acids				
CO6	Extraction and structural elucidation of conine and nicotine				
CO7	Classification and biological functions of Vitamins and Lipids				
CO8	Understand the salient features of polymerization				
CO9	Compare the reactivity and application of Grignard reagents, Organo lithium reagents and Organo Zinc reagents				
CO10	Describe the synthetic applications of acetoacetic ester.				

Semester	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Physical Chemistry III	CH1643	Core course VIII	4	4 (Total 72)
Course Outcomes					
CO1	Understand the basic components of Chemical Kinetics				
CO2	Explain the thermodynamic derivation of law of mass action				
CO3	Describe the derivation of Clausius-clapeyron equations and its applications				
CO4	Understand pH and its determination by indicator methods, discuss buffer action and Henderson's equation				
CO5	Application of phase rule to Water and Sulphur systems				
CO6	Describe the features of Pb-Ag system and KI-water system				
CO7	Discuss the various Binary liquid systems and their properties				
CO8	Explain the various theories of catalysis				
CO9	Describe the types of electrodes, derivation of Nernst equation for electrode potential and cell potential				
CO10	Understand the principle and types of Fuel cells: - Hydrogen-Oxygen fuel cell and Hydrocarbon – Oxygen fuel cell.				
CO11	Explain Kohlrausch's law and its applications				
CO12	Compare Wein effect and Debye-Falkenhagen effect				

COURSE OUTCOMES FOR BSC ZOOLOGY

	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Animal Diversity 1	ZO1141	Core course 1	3	3 (Total 54)
Course Outcomes					
CO1	Understand Taxonomy and its importance				
CO2	General characters, structure, zoological importance and systematic position of *Actinophrys, Noctiluca, Paramecium* and *Opalina*				
CO3	Classification, morphology, life history, pathogenicity and prophyllaxis of Parasitic protozoans				
CO4	Describe the general features and classification Kingdom Animalia				
CO5	General characters and classification of Sub kingdom Mesozoa, Parazoa and Eumetazoa				
CO6	Understand the classification of Phylum Coelenterate and Polymorphism in coelenterates, Coral and Coral Reef				
CO7	Definition, characters and classification Phylum Annelida				
CO8	Definition, features and classification of Phylum Platyhelminthes:				
CO9	Definition, characters and classification Phylum Arthropoda				
CO10	Definition, characters and classification Phylum Mollusca				
CO11	Understand the economic importance of mollusca, Pearl culture and Mussel culture				
CO12	General characters and classification of Phylum Echinodermata				

	Course title	Course code	Course category	Number of credits	Instructional hours/ week
II	Animal Diversity II	ZO1241	Core course II	3	3 (Total 54)
Course Outcomes					
CO1	Undertand Chordate characters and classification of Phylum Chordata				
CO2	Describe the general characters,and classification of Subphylum Vertebrata				
CO3	Discuss accessory respiratory organs in fishes and Dipnoians				
CO4	Explain the Salient features of Super class Tetrapoda and Class Amphibia				
CO5	Understand the parental care in Amphibia				
CO6	Discuss the general characters and the classification of Class Reptilia				
CO7	Information on the general characters of Class Aves and the Subclasses Archeornithes and Neornithes				
CO8	Understand the migration in birds, Flightless birds and Flight adaptations in birds				

CO9	Describe the general characters and classification of Class Mammalia				
CO10	Explain Dentition in mammals, Egg laying mammals, Aquatic adaptations in mammals				
CO11	Understand the economic importance of mollusca, Pearl culture and Mussel culture				
CO12	Compare Brain and Arterial system of pisces, amphibian, reptiles, aves and human.				
	Course title	Course code	Course category	Number of credits	Instructional hours/ week
III	Experimental Zoology, Instrumentation Biostatistics and Bioinformatics	ZO1341	Foundation Course	3	3 (Total 54)
Course Outcomes					
CO1	Understand the nature and scope of Zoology				
CO2	Instrumentation (Principle Working and Application) of various microscopes				
CO3	Compare the principle, working and uses of Photometry, Colorimetry and Spectrophotometry				
CO4	Introduction to Biostatistics				
CO5	Information on Testing of hypothesis and goodness of fit				
CO6	Overview of Information Technology				
CO7	Understand the Nature & Scope of Bioinformatics				
CO8	Compare the basic concepts of Bioinformatics and Computational Biology				
CO9	Introduction to Proteomics and understand the basic ideas of Protein Structure prediction				
CO10	Understand the Basic concepts of computer Aided Drug Discovery				
CO11	Compare the principle and working of Autoradiography and chromatography				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Ecology, Habitat destruction & Disaster Management	ZO1441	Core course III	3	3 (Total 54)
Course Outcomes					
CO1	Acquire basic knowledge on ecosystem, food chain, food web and energy flow				
CO2	Acquire general awareness on pollution and their impacts				
CO3	Imparts basic knowledge on ecosystems and their functioning				
CO4	Learn about various types of anthropogenic pressures on ecosystem, related degradation and management measures.				
CO5	Awareness of toxicants, their impacts on human health and environment and remedial measures.				
CO6	Create awareness about disasters, prevention and mitigation measures				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Cell and Molecular Biology	ZO1541	Core course IV	4	4 (Total 90)
Course Outcomes					
CO1	acquire sufficient knowledge on the fundamental structure, function and biochemistry of the cell.				
CO2	They understand the principles of molecular biology and gene manipulation.				
CO3	Students understand the fundamental differences between prokaryotic and eukaryotic cells.				
CO4	Students learn ultra-structure of prokaryotic and eukaryotic cells				
CO5	Students learn the structure, replication and modification of the genetic material of eukaryotes.				
CO6	Students understands the mechanism of gene expression and gene regulation				
CO7	Gets an awareness of bacterial recombination				
CO8	Students acquire scientific knowledge on cancer and ageing				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Genetics and Biotechnology	ZO1542	Core course V	4	4 (Total 72)
Course Outcomes					
CO1	Understand the fundamentals of genetics				
CO2	Explain the significance of linkage and mechanism of crossing over				
CO3	Describe sex determining mechanism and Genic balance theory				
CO4	Discuss the significance of mutation				
CO5	Outline the biochemical pathway of phenyl alanine, tyrosine metabolism in normal man				
CO6	Information on Genetic engineering and recombinant DNA technology				
CO7	Describe the major steps in cutting and joining of DNA				
CO8	Explain the construction of genomic library and cDNA library				
CO9	Write down the basic steps and applications of PCR				
CO10	Explain the various Blotting Techniques				
CO11	Describe important gene transfer techniques				
CO12	Describe cloning, therapeutic and reproductive cloning				
CO13	Write down the practical applications of biotechnology				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Immunology & Microbiology	ZO1543	Core course VI	4	4 (Total 72)
Course Outcomes					
CO1	Discuss the history, development and scope of immunology				
CO2	Understand the definition, classification of immunity				
CO3	Describe the organs and tissues of the immune system				
CO4	Compare the types and general structure of Antigens and antibodies				
CO5	Understand antigen–antibody reactions and mechanism				
CO6	Information on the types of immune responses				
CO7	Discuss the classification of types I, II and III immuno deficiency diseases				
CO8	Understand the basics of Acquired Immune Deficiency Syndrome (AIDS)				
CO9	Explain the Different types of vaccines				
CO10	Describe the Classification of microbes				
CO11	Introduction to the application of Applied microbiology in various fields:				
CO12	Understand microbe – human host interactions				
CO13	Write down the various microbial diseases in man				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Human Health and Sex Education	ZO1551.2	Open course I	2	3 (Total 54)
Course Outcomes					
CO1	Introduction to health, health awareness and Immunity				
CO2	Understand the features of Human reproductive system				
CO3	Explain the events of human reproduction				
CO4	Describe the different methods of Contraception				
CO5	Understand the reasons and treatment for Infertility				
CO6	Information on the Assisted Reproductive Techniques				
CO7	Awareness about sexually transmitted diseases				
CO8	Understand the importance of Sex education				
CO9	Describe the legal aspects of sexual awareness and policies				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Physiology and Biological chemistry	ZO 1641	Core course VII	4	5 (Total 90)
Course Outcomes					
CO1	Introduction, types of nutrition, mechanical and chemical changes of food in the body				
CO2	Composition and functions of blood plasma and formed elements, blood groups, and mechanism of blood clotting				
CO3	Understand the fundamentals of respiration, respiratory pigments- structure of haemoglobin and transport of oxygen				
CO4	Describe the structure and functions of Renal Physiology				
CO5	Brief account of types of muscles and Physiological and biochemical events in muscle contraction.				
CO6	Describe the structure and functions Nerve Physiology				
CO7	Structure of eye and ear, Physiology and photo chemistry of vision.				
CO8	Describe the structure and functions Reproductive physiology				
CO9	Information on the Endocrine glands in man, hormones and disorders				
CO10	Discuss the structure and classification of Micromolecules and macromolecules in the body				
CO11	Understand Carbohydrate metabolism, Lipid metabolism and Protein metabolism				
CO12	Compare the biological functions of carbohydrates, lipids and proteins				
CO13	Discuss the chemical nature, mechanism of enzyme action and factors affecting enzyme activity				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Developmental Biology & Experimental Embryology	ZO1642	Core course VIII	4	4 (Total 72)
Course Outcomes					
CO1	Understand Spermatogenesis and oogenesis				
CO2	Explain the classification of eggs based on different criteria				
CO3	Discuss the various stages involved in Fertilization				
CO4	Compare holoblastic cleavage and meroblastic cleavage				
CO5	Introduction and brief account of morphogenetic movements				
CO6	Explain the process of Cell differentiation				
CO7	Study the various stages involved in the development of organisms				
CO8	Understand the developmental cycles of Amphioxus, frog, chick and man				
CO9	Information on Teratology and the causes of abnormal development				
CO10	Describe Spemann's constriction experiments				
CO11	Explain the significance of parthenogenesis				
CO12	Discuss the In vitro fertilization and embryo transfer experiments in man, farm animals				

	and test tube babies
CO13	Understand prenatal diagnosis and sex determination methods

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Ethology, Evolution & Zoogeography	ZO1643	Core course IX	3	4 (Total 72)
Course Outcomes					
CO1	History and scope of ethology				
CO2	Sounds as communication system in the Animal world				
CO3	Light as a device for Animal Communication				
CO4	Transmission of Information through Chemicals				
CO5	To study the physiological basis of behavior.				
CO6	Compare the theories of organic evolution				
CO7	Explain the paleontological evidences of evolution, fossil dating and significance of fossils.				
CO8	Discuss Natural selection and its classification				
CO9	Understand the organic and cultural evolution of man				
CO10	Describe the geographic distribution of animals, factors affecting and challenges				
CO11	Explain the meaning and types of Zoogeographical Realms				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Economic Zoology: Vermiculture & Apiculture	ZO1651.1	Elective course	2	3 (Total 54)
Course Outcomes					
CO1	Understand the definition and scope of vermiculture				
CO2	Describe the nature and species of earthworms				
CO3	Explain the methodology of vermicomposting				
CO4	Discuss the physical, chemical and biological parameters of vermicast, vermin enrichment and economic uses of vermiculture				
CO5	Definition and significance of the study of apiculture				
CO6	Explain the various Bee keeping methods and equipments				
CO7	Understand the social life and adaptations of honeybees.				
CO8	Discuss the diseases affecting honey bee and the preventive/curative measures.				

COURSE OUTCOMES FOR BCOM

	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Methodology and perspectives of Business Education	CO 1121	Foundation course 1	2	4 (Total 72)
Course Outcomes					
CO1	Understand the Economic system, its functioning and classification				
CO2	Information on various Business entities				
CO3	Information on direct and indirect taxes				
CO4	Describe the Economic sectors of the Economy				
CO5	Compare Privatization and Globalization - merits and demerits				
CO6	Understand the Role of entrepreneur				
CO7	Discuss the measures of economic development				
CO8	Understand the role of trained manpower for quality				
CO9	Fundamental understanding about ethical practices in business				
CO10	Describe the use of technology in business				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Environment studies CC 1141	CO 1141	Core course I	3	4 (Total 72)
Course Outcomes					
CO1	Understand the scope and importance of Environmental studies				
CO2	Describe the concept and the classification of ecosystems				
CO3	Explain the Biodiversity of India				
CO4	Write down the various Natural resources				
CO5	Understand the role of an individual in conservation of natural resources				
CO6	Describe the different types of pollution				
CO7	Outline the methods of waste management				
CO8	Information on the urban problems related to energy				
CO9	Understand the importance and methods for water conservation				
CO10	Stress on the impact of Human Population and environment				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
I	Management Concepts and Thought	CO 1142	Core course II	4	5 (Total 90)
Course Outcomes					
CO1	Understand the need of Effective Management				
CO2	Explain various Management skills				
CO3	Information on contemporary management thought- by Drucker, Porter, Prahlad, Hamel and Tom Peters				
CO4	Overview of the Management Process				
CO5	Discuss about the types of Organizational Culture				
CO6	Information on Leadership Qualities and Leadership Styles				
CO7	Understand the various Leadership Theories				
CO8	Meaning and Importance of Motivation				
CO9	Describe Communication-Meaning, Need, Process and Types				
CO10	Understand the Meaning and Principles of TQM				
CO11	Understand the Five F's of Management				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Informatics and Cyber Laws CC	CO 1221	Foundation course II	3	4 (Total 72)
Course Outcomes					
CO1	Information on Computer networks, Internet and wireless technology				
CO2	Introduction to use of IT in teaching and learning				
CO3	Compare the Academic services – INFLIBNET, NICNET and BRNET.				
CO4	Understand the various Internet access methods –Dial-up, DSL, Cable, ISDN and Wi-Fi				
CO5	Describe the concept of digital divide and methods to counter it.				
CO6	Explain the impact of IT on language & culture-localization issues				
CO7	Compare artificial intelligence, Virtual reality and bio computing				
CO8	Overview of IT application in medicine, healthcare, business, commerce, industry, Defense and crime detection				
CO9	Understand the various class of cybercrimes				
CO10	Scope of cyber laws and Provisions under IT Act 2000				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Financial Accounting	CO 1241	Core course III	4	5 (Total 72)
Course Outcomes					
CO1	Describe the generally accepted Accounting Principles				
CO2	Understand the preparation of Accounts for sole trader				
CO3	Information on Depreciation Accounting				
CO4	Discussion on Accounting for packages and containers				
CO5	Understand the various Investment Accounts				
CO6	Write down the differences between Hire Purchase and Installment				
CO7	Explain the preparation of voyage accounts				
CO8	Understand the various Insurance Claims				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
II	Business Regulatory Framework	CO 1242	Core course IV	3	4 (Total 72)
Course Outcomes					
CO1	Understand the framework of Indian business Laws				
CO2	Discuss about contracts their classification and law of contracts				
CO3	Understand the remedies for breach of contract				
CO4	Information on Special contracts				
CO5	Understand the Meaning and definition of guarantee				
CO6	Information on Sale of Goods Act 1930				
CO7	Understand the salient features and functions of IRDA and TRAI				
CO8	Information on Right to Information Act 2005				
CO9	Understand the powers and functions of Information Commission				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Entrepreneurship Development	CO 1341	Core course V	3	4 (Total 72)
Course Outcomes					
CO1	Understand the characteristics of entrepreneur				
CO2	Discuss the role of entrepreneurs in the economic development				
CO3	Understand the problems faced by women entrepreneurs				
CO4	Information on the latest programs of Government in promoting small and medium industries.				
CO5	Discuss about Business Plan and Feasibility Study				
CO6	Explain the purpose of project reports, write down the requirements of a good report				
CO7	Discuss the benefits of Industrial estates and their Classification				
CO8	Understand the effective Management of Small Business				
CO9	Information on Industrial Sickness-Causes and Prevention				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Advanced Financial Accounting	CO 1342	Core course VI	4	5 (Total 90)
Course Outcomes					
CO1	Understand the basic features of Partnership Accounts				
CO2	Explain the preparation of Realization Accounts and Capital Accounts				
CO3	Describe the elements involved in accounting for consignment				
CO4	Understand the difference between consignment and sales				
CO5	Compare cost price method and invoice price method				
CO6	Explain the difference between joint venture and partnership				
CO7	Discus joint venture, consignment and accounting treatment				
CO8	Describe the features and types of branch accounting				
CO9	Compare Debtors system and Stock and Debtors system				
CO10	Describe the objectives and advantages of Departmental Accounting				
CO11	Outline the differences between departmental accounts and branch accounts				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Company Administration	CO 1343	Core course VII	4	4 (Total 72)
Course Outcomes					
CO1	Introduction to Company Law				
CO2	Describe the types of Companies				
CO3	Understand the constitution of Board of Directors				
CO4	Write down the functions and responsibilities of Board of Directors				
CO5	Information on Boards report and report on AGM				
CO6	Explain the advantages of online Filing of Documents				
CO7	Discuss the significance of Directors Identification Number				
CO8	Understand the responsibilities and Challenges of Company Secretary				
CO9	Describe the voluntary Winding up of companies				
CO10	Discuss the summary Procedure for Liquidation				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
III	Computer Application for Publication	CO 1361.5	Elective Course I	4	5 (Total 90)
Course Outcomes					
CO1	Functional knowledge in the field of free software				
CO2	Understand the basic elements of Word processing				
CO3	Practical knowledge in the Advanced uses of MS Word				
CO4	Describe creating documents using templates				
CO5	Adding and removing digital signatures in documents				
CO6	Understand the basic functions in Adobe				
CO7	Information on Microsoft PowerPoint – Introduction and creating presentations				
CO8	Describe the process of converting the presentations into a video clip				
CO9	Practical experience with Linux-Use of internal commands and external commands.				
CO10	Explain the process of creating hyperlinks in presentations				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Indian Financial Market	CO 1441	Core course VIII	3	4 (Total 72)
Course Outcomes					
CO1	Understand the structure of financial market				
CO2	Function and components of Money market				
CO3	Understand the components of Primary Market				
CO4	Outline the salient features of Secondary Market				
CO5	Role and functioning of the major stock exchanges in India				
CO6	Understand the meaning and types of derivative contracts				
CO7	Overview of the SWAPS- Trading mechanism				
CO8	Understand the Role and functions of SEBI				
CO9	Information on Foreign Exchange Management Act				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Banking and Insurance	CO 1442	Core course IX	3	4 (Total 90)
Course Outcomes					
CO1	Information on the functions of Banking				
CO2	Understand the Role of RBI and the General policies of RBI				
CO3	Explain the nature of relationship between banker and customer				
CO4	Understand the procedure for opening and operation of accounts by special types of customers – minor, married woman, firms, company				
CO5	Information on Innovations and Reforms in Banking				
CO6	Understand the role of Banking Ombudsman				
CO7	Discuss about the classification of insurance business in India				
CO8	Information on the different types of insurance claims				
CO9	Bancassurance and IRDA regulations				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Corporate Accounting	CO 1443	Core course X	4	5 (Total 90)
Course Outcomes					
CO1	Explain the Accounting standards applicable to corporate sector				
CO2	Describe the preparation of final accounts of companies				
CO3	Understand company statutory records				
CO4	Determination of profit in Life Insurance Business				
CO5	Information on EBIT –EPS Analysis				
CO6	Understand the objectives of AS 20				
CO7	Explain the reorganization of capital: consolidation and subdivision of share capital				
CO8	Understand the Interpretation of financial statements				
CO9	Compare Basic EPS and Diluted EPS				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
IV	Software for Data Management	CO 1461.5	Elective Course II	4	5 (Total 90)
Course Outcomes					
CO1	Understand the basics of Libra Office				
CO2	Understand the fundamentals of Microsoft Excel				
CO3	Explain the various categories of excel charts				
CO4	Discuss about the Advanced uses of Microsoft Excel				
CO5	Information on the Software Package in Social Sciences (SPSS)				
CO6	Compare Identification numbers and case numbers				
CO7	Explain Parametric and non-parametric data and tests				
CO8	Understand the fundamentals of creating a new database				
CO9	Explain the types of reports and queries: Basic steps involved in creating a query and report				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Fundamentals of Income Tax	CO 1541	Core course XI	4	5 (Total 90)
Course Outcomes					
CO1	Basic Concepts and Definitions of Income Tax Act				
CO2	Information on tax exempted incomes				
CO3	Understand the deductions from Salary				
CO4	Describe the computation of Income from Salaries				
CO5	Computation of Income from House property				
CO6	Understand the importance of the Audit of Accounts				
CO7	Explain Capital assets and kinds of Capital assets				
CO8	Describe the computation of Capital Gain				
CO9	Idea about incomes taxable				
CO10	Understand the Computation of Gross Total Income				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Cost Accounting	CO 1542	Core course XII	4	5 (Total 90)
Course Outcomes					
CO1	Explain the objectives, advantages and limitations of Cost Accounting				
CO2	Distinction between financial accounting and cost accounting				
CO3	Write down the Methods and Techniques of cost accounting				
CO4	Compare ABC, VED and FSN analysis				
CO5	Describe perpetual and periodical inventory system				
CO6	Understand Accounting and control of labour cost				
CO7	Explain the concept of learning curve				
CO8	Discuss Accounting for overheads and classification				
CO9	Understand the determination of overhead rates				
CO10	Information on cost accounting records				
CO11	Describe the preparation and presentation of cost sheets				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Marketing Management	CO 1543	Core Course XIII	3	4 (Total 72)
Course Outcomes					
CO1	Understand the concept of marketing				
CO2	Understand the importance of Customer Relationship Management				
CO3	Describe the factors affecting price determination				
CO4	Explain the strategies for product promotion: promotion mix and factors influencing promotion mix				
CO5	Understand the objectives, functions and types of advertisement				
CO6	Describe Managing logistics and channels of distribution				
CO7	Compare Traditional Logistics management approach Vs Supply chain Management				
CO8	Information on the different methods of sales promotion				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Fundamentals of Financial Accounting	CO 1551.1	Open course I	2	3 (Total 54)
Course Outcomes					
CO1	Understand objectives of financial accounting				
CO2	Describe various Accounting Standards				
CO3	Explain the rules of debit and credit				
CO4	Describe the process of Recording Business Transactions				
CO5	Understand the various types of Cash book				
CO6	Comparison of Ledger and Journal				
CO7	Information on the preparation of Trial Balance				
CO8	Understand the preparation of final accounts with adjustments				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
V	Web Designing and Production for Business	CO 1561.5	Elective Course III	4	5 (Total 90)
Course Outcomes					
CO1	Information on the Types of websites				
CO2	Explain the process of addressing a web site: Absolute & Relative addresses				
CO3	Understand the basics of HTML				
CO4	Describe the various Image Formats for the web				
CO5	Discuss the types of hyperlinks				
CO6	Introduction to CSS				
CO7	Understand thetypes of sound files and embedding sound files				
CO8	Explain the process of Downloading animations				
CO9	Describe the concepts Domain names and web hosting				
CO10	Provide an overview of XML				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Auditing	CO 1641	Core course XIV	4	4 (Total 72)
Course Outcomes					
CO1	Understand the objectives of Auditing				
CO2	Explain the different Types of audit				
CO3	Describe the preparation before audit				
CO4	Write down the requirements of a voucher				
CO5	Understand the difference between vouching and verification				
CO6	Compare Verification and Valuation				
CO7	Explain the Qualifications and Disqualifications of an Auditor				
CO8	Information on the Powers and Duties of an Auditor				
CO9	Distinction between investigation and auditing				
CO10	Understand the different types of Investigation				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Applied Costing	CO 1642	Core course XV	4	5 (Total 90)
Course Outcomes					
CO1	Explain meaning and procedures of Job costing and Batch costing				
CO2	Understand the meaning of contract costing and determination of profit or loss on contract				
CO3	Compare Process Accounts and Process Losses				
CO4	Describe the methods of apportioning joint costs				
CO5	Understand the features of Service Costing				
CO6	Outline the differences between marginal costing and absorption costing				
CO7	Write down the Components of standard cost				
CO8	Compare historical costing *vs* standard costing				
CO9	Explain Variance Analysis				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Management Accounting	CO 1643	Core course XVI	4	5 (Total 90)
Course Outcomes					
CO1	Compare Financial Accounting and Management Accounting				
CO2	Explain the role of management accounting in decision making				
CO3	Concept and nature of decision-making process				
CO4	Understand the concept of Decision tree				
CO5	Preparation, objectives and uses of Fund flow statement				
CO6	Differences between Fund Flow Statement and Income statement/balance sheet				
CO7	Meaning and importance of Budgeting				
CO8	Understand the concept of master budget				
CO9	Meaning, Nature, and Importance of Capital Expenditure Decisions				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Computerized Accounting	CO 1661.5	Elective course IV	4	5 (Total 90)
Course Outcomes					
CO1	Understand the basics of Company creation and set-up of accounts in Tally				
CO2	Explain the Concepts of Grouping of Accounts				
CO3	Describe the various types of Vouchers used in Tally				
CO4	Creation of Voucher type and types of accounting Vouchers				
CO5	Understand the various books of accounts and its advanced usages				
CO6	Generation and Reconciliation of TDS Challans				
CO7	Understand Filing e-TDS return				
CO8	Calculation of VAT in Tally				
CO9	Information on Report Generation and Printing: Display of Trial balance				
CO10	Develop practical skills in the application of Tally Package				

	Course title	Course code	Course category	Number of credits	Instructional hours/week
VI	Strategic Management	CO 1651.2	Open Course II	2	3 (Total 54)
Course Outcomes					
CO1	Understand the basics of strategic management				
CO2	Describe the statement of Strategic intent				
CO3	Explain the various types of strategy adopted by organizations				
CO4	Understand the basics of Strategic Analysis				
CO5	Explain the various approaches to strategy implementation				
CO6	Understand the techniques of strategic evaluation and Strategic control				

COURSE OUTCOMES FOR MSC PHYSICS

Semester	Course title	Course code	Course category	Instructional hours/week
I	Classical Mechanics	PH 211	Core course I	7 (Total 110)
Course Outcomes				
CO1	Understand D'Alemberts principle and Lagrange's equations			
CO2	Describe the simple applications of Lagrangian formulation			
CO3	Explain Hamilton's principle and derivation of Lagrange's equations from Hamilton's principle			
CO4	Discuss inverse square law of force			
CO5	Understand the theory of small oscillations and longitudinal vibrations of carbon dioxide molecule			
CO6	Describe the basic elements of Hamiltonian mechanics			
CO7	Explain the separation of variables in Hamilton-Jacobi equation			
CO8	Discuss Euler's equations of motion of a rigid body			
CO9	Explain Special and General Relativity theory			
CO10	Understand Lagrangian formulation of relativistic mechanics			
CO11	Compare Linear and nonlinear systems and limit cycle			
CO12	Describe Lyapunov exponent and Chaos-ideas of fractals and solitons			

Semester	Course title	Course code	Course category	Instructional hours/week
I	Mathematical Physics	PH 212	Core course II	7 (Total 108)
Course Outcomes				
CO1	Information on Vector analysis and matrices			
CO2	Explain Cauchy-Riemann conditions and Cauchy's integral theorm			
CO3	Describe the general principles of Fourier series-advantages and applications			
CO4	Understand the basics of probability			
CO5	Compare Laplace transforms and inverse Laplace transforms			
CO6	Distinguish Bessel functions Neumann functions Legendre functions Hermite functions-Lagurerre functions			
CO7	Understand Notations and conventions in tensor analysis			
CO8	Information on the algebraic operations in tensors			
CO9	Compare chi-square and student 't' distributions			
CO10	Describe homomorphism and isomorphism of groups			
CO11	Compare reducible and irreducible representations			
CO12	Explain the applications of group theory in crystallography and molecular symmetry			

Semester	Course title	Course code	Course category	Instructional hours/week
I	Basic Electronics	PH 213	Core course III	7 (Total 108)
Course Outcomes				
CO1	Understand Bode plots and Miller effects			
CO2	Describe Active filters and Phase Locked Loop circuits			
CO3	Write down the applications of semi conductor microwave devices			
CO4	Explain Arithmetic and data processing digital circuits			
CO5	Compare clocked SR flip flops-JK flip flops			
CO6	Information on the different types of registers-shift registers and applications			
CO7	Understand the types and applications of electronic counters			
CO8	Explain the Mode theory of circular wave guide and wave guide equations			
CO9	Compare LED's and Laser diodes			
CO10	comparison between analog and digital instruments			
CO11	Understand the components of a CRO			
CO12	Explain the classification of transducers			

Semester	Course title	Course code	Course category	Instructional hours/week
II	Modern Optics & Electromagnetic Theory	PH 221	Core course IV	7 (Total 108)
Course Outcomes				
CO1	Understand Fabry-Perot interferometer theory of multilayer films			
CO2	Information on Fresnel-Kirchoff integral theorem and formula			
CO3	Explain Fraunhofer and Fresnel diffraction patterns and theory			
CO4	Compare the basic ideas of Raman-Nath diffraction and Bragg diffraction			
CO5	Understand the ideas of parametric amplification			
CO6	Explain the optic modulation of laser beams and the use of $LiNbO_3$ crystals as phase modulators			
CO7	Describe the different Electromagnetic wave equations			
CO8	Understand the potential formulation of relativistic electrodynamics			
CO9	Explain the classification of different radio wave bands			
CO10	Understand the Smith Chart and applications of transmission lines			
CO11	Information on Rectangular wave guides and wave propagation in the wave guide			
CO12	Types and characteristics of antenna			

Semester	Course title	Course code	Course category	Instructional hours/week
II	Thermodynamic, statistical physics and basic Quantum Mechanics	PH 222	Core course V	7 (Total 108)
Course Outcomes				
CO1	Describe the derivation of Clausius–Clapeyron equations and the Properties of thermodyanamic potentials			
CO2	Explain Nernst –heat theorem and its consequences			
CO3	Understand Lioville's theorem			
CO4	Decribe Maxwell-Boltzmann distribution laws			
CO5	Compare Bose Einstein statistics, Maxwell Boltzmann statistics and Fermi Dirac statistics			
CO6	Explain the Statistical theory of white dwarfs			
CO7	Describe Vander wal's equation and phase transitions			
CO8	Compare Yang and Lee theory and London theory of phase transitions			
CO9	Understand the Basic postulates of quantum mechanics			
CO10	The Stern-Gerlach experiment and the measurement process			
CO11	Understand the paradoxes in quantum mechanics: EPR paradox and Schrodinger cat-quantum zero paradox			
CO12	Analyze the exactly solvable problems in quantum mechanics			

Semester	Course title	Course code	Course category	Instructional hours/week
II	Computer Science & Numerical Techniques	PH 223	Core course VI	7 (Total 106)
Course Outcomes				
CO1	Understand operating systems, data communications and computer networks			
CO2	Describe the basics of Python programming			
CO3	Information on the basic components of Intel 8085 8-bit microprocessor			
CO4	Understand the Assembly language programming of 8085			
CO5	Explain the fundamental structure of C++ programs			
CO6	Describe the basic file operations in C++-			
CO7	Compare iterative statements and switch statements in C			
CO8	Discuss the Gauss elimination method-Gauss Jrdan method			
CO9	Understand Gregory Newton forward and backward formula			
CO10	Compare Striling's formula and Lagrange interpolation formula			
CO11	Explain Simsons 1/3 and 1/8 rules			
CO12	Discuss solutions to Poisson and Laplace equations			

Semester	Course title	Course code	Course category	Instructional hours/week
III	Quantum Mechanics	PH 231	Core course VII	7 (Total 108)
Course Outcomes				
CO1	Describe the Approximation methods in quantum mechanics			
CO2	Explain Stark effect in hydrogen atom and time dependent perturbation theory			
CO3	Compare Rayleigh and Raman scattering			
CO4	Discuss eigen values and eigen functions of L2 and Lz			
CO5	Understand the addition of angular momentum-Clebiz-Jordon coefficients			
CO6	Explain various symmetry transformations			
CO7	Understand the basics of WKB approximation			
CO8	Analyze the Quantum theory of scattering			
CO9	Understand Thomas Fermi model of an atom, Hartree and Hartree-Fock equations			
CO10	Describe Klein-Gordon equations and its relevance			
CO11	Discuss Dirac's relativistic theory, Dirac's equation for a free particle and Dirac matrices			
CO12	Compare Lagrangian and Hamiltonian formulation of classical fields			
CO13	Understand the quantization of the Schrodinger equation, Klein-Gordon and Dirac fields and quantisation of the electromagnetic field			

Semester	Course title	Course code	Course category	Instructional hours/week
III	Atomic and Molecular Spectroscopy	PH 232	Core course VIII	7 (Total 108)
Course Outcomes				
CO1	Introduction to atomic spectroscopy			
CO2	Information on symmetry elements, operations and point groups			
CO3	Explain rotational spectra of diatomic molecules			
CO4	Understand the fundamentals of Vibrational spectra of diatomic molecules			
CO5	Discuss Fourier transform IR spectroscopy			
CO6	Explain Deslanders table-Frank condon principle			
CO7	Theory of Raman scattering-rotational and vibrational Raman spectra			
CO8	Describe structure determination using Raman and IR spectroscopy			
CO9	Discuss the principle of NMR-ESR spectrometer			
CO10	Understand the interpretation of NMR spectra			
CO11	Explain the fundamentals of Mossabauer spectroscopy			
CO12	Describe photoelectron spectra and their interpretation			
CO13	Understand the basic theory, experimental arrangement and applications of Flourescence spectroscopy			

Semester	Course title	Course code	Course category	Instructional hours/week
III	Advanced Electronics I	PH 233 E	Elective course I	7 (Total 144)
Course Outcomes				
CO1	Explain amplitude modulation and DSB, SSB schemes			
CO2	Information on the Advantages and disadvantages of microwave radio communications			
CO3	Discuss the classification and applications of pulse modulation			
CO4	Explain the Basics of information theory and ideas of digital codes			
CO5	Describe the transmission using PCM and time division multiplexing (TDM)			
CO6	Overview of the optical communication system and its components			
CO7	Understand Mobile cellular communications			
CO8	Compare the basics of signals and systems			
CO9	Describe Fourier analysis of signals and systems			
CO10	Definition and properties of z-transform			
CO11	Explain the analog to digital conversion of signals			
CO12	Explain the various Digital filters			

Semester	Course title	Course code	Course category	Instructional hours/week
IV	Condensed Matter Physics	PH 241	Core course IX	7 (Total 108)
Course Outcomes				
CO1	Understand symmetry elements in crystals, space groups and Bravais lattice			
CO2	Describe the importance and calculation of Miller indices			
CO3	Explain allotropy and polymorphism in crystals			
CO4	Compare classical model, Einstein's model and Debye model's of specific heat			
CO5	Understand the basic postulates of Free electron and band theory			
CO6	Describe the Hall effect in semiconductors			
CO7	Compare Peizo,Pyro and Ferro electric properties of crystals			
CO8	Explain atomic theory of magnetism, Langevins theory, paramagnetism and quantum theory			
CO9	Introduction to Type I and II superconductors and discuss their microwave and IR properties			
CO10	Compare the various theories of superconductivity			
CO11	Describe the various nano material preparation techniques			
CO12	Understand the characterization of nono materials using AFM, TEM and SEM			

Semester	Course title	Course code	Course category	Instructional hours/week
IV	Nuclear & Particle Physics	PH 242	Core course X	7 (Total 108)
Course Outcomes				
CO1	Explain the meson theory of nuclear forces			
CO2	Detailed studies on liquid drop, shell and collective models of the nuclei			
CO3	Understand the laws, theories, energetics and Q value of nuclear reactions			
CO4	Describe the calculation of critical fission energy based on liquid drop model			
CO5	Discuss neutron cycle and four factor formula			
CO6	Information on the general features and classification of nuclear fission reactors			
CO7	Describe the conditions for the construction of nuclear fusion reactor			
CO8	Compare the principles of pinch, magnetic and inertial confinements			
CO9	Explain the functioning of ionization chamber and proportional counters			
CO10	Compare Scintillation detectors and semiconductor detectors			
CO11	Describe the functioning of different particle accelerators			

Semester	Course title	Course code	Course category	Instructional hours/week
IV	Advanced Electronics II	PH 243E	Elective course II	7 (Total 108)
Course Outcomes				
CO1	Describe the basics and Programming of Microprocessor 8086			
CO2	Understand the Microprocessor interfacing devices and advanced microprocessors			
CO3	Analyze the knowledge representation and problem solving in artificial intelligence			
CO4	Describe the basics of robotics			
CO5	Compare ADALINE and MADALINE networks			
CO6	Information on the general features and classification of nuclear fission reactors			
CO7	Understand the Basic principles of radar			
CO8	Compare LORAN and DECCA systems for Navigation			
CO9	Information on the satellite classifications			
CO10	Explain the satellite system parameters and link equations			
CO11	Discuss the fundamental concepts of data communication			

PROGRAM SPECIFIC OUTCOMES (PSO'S)

Department	Program Specific Outcomes (PSO's)
English	Develop good fundamental knowledge of modern English grammar.
	Recognize the major issues in the society and the world.
	Analyze literary pieces critically.
	Understand the ways to create grammatically and idiomatically correct language
	Improved verbal communication skills and accuracy in writing
	Understand the importance of maintaining a fine balance between mother tongue and English language
	Understand writing techniques to meet academic and professional needs.
	Understand the aesthetic, cultural and social aspects of literature.
	Understand the basics of academic presentation
BA Economics	Understand methodology and tools of economics
	Analyze the development of Indian Economy since independence
	Understand the basics of micro and macroeconomics
	Understand Market Equilibrium
	Familiarize students about the evolution and role of money in the economy
	Understand the role of mathematics in economic theory
	Understand and analyze the difficulties in the measurement of National Income
	Understand the role of taxation
	Determine the role of human resource management in economic growth
	Understand the role of agriculture in Indian economy
	Understand the banking sector reforms in India
	Understand the basic concepts of development and growth
BSC Physics	Understand the principles of basic mechanics and properties of matter
	Understand the components of classical mechanics
	Understand important thermodynamic principles and the basics of statistical physics
	Analyze the importance of electrodynamics
	Understand the origin and significance of special theory of relativity
	Understand the principles of quantum mechanics
	Identify the applications of electronics

	Acquire fundamental knowledge about various spectroscopic techniques
	Understand the principles and applications of solid state physics
	Analyze the fundamentals of classical and modern optics
	Understand the basics of digital electronics
	Determine the role of computer programs in solving problems of physics
	Develop experimental and data analysis skills through a wide range of experiments conducted at the practical laboratories.

BSC Chemistry	Understand the theoretical aspects of atomic structure and the properties of hydrogen.
	Understand the principles of qualitative and quantitative inorganic analysis at the laboratory.
	Learn about environmental chemistry and different types of pollution.
	Acquire basic laboratory skills required for chemical analysis and become familiar with data collection, record keeping and data analysis in a chemical laboratory.
	Understand the origin of chemistry and its evolution as a branch of science
	Analyze the different theories of chemical bonding and the basic principles of nuclear chemistry
	Acquire fundamental knowledge in hybridization and aromaticity
	Understand the fundamentals of the mechanism of organic reactions
	Expand knowledge about the stereochemistry of organic compounds.
	Develop strong foundation in physical chemistry especially in thermodynamics and group theory
	Understand the basics of quantum mechanics and spectroscopy
	Understand the properties and applications of the different classes of organic compounds
	Understand the fundamentals of phase equilibrium, kinetics and electrochemistry
BSC Zoology	Acquire in-depth knowledge of the diversity, structure and habits of invertebrates
	Understand how research progress in biological science
	Understand the fundamental structure, biochemistry and function of the cell
	Obtain hands on training experience in anatomy through simple dissection and

	mountings
	Understand the genetic mechanism as well as the principles and techniques involved in bio technology
	To update the student on the scope and importance of clinical immunology and create an awareness about the inherent dangers of microbes
	Learn the structure and functions of bio-molecules and their role in metabolism
	Expand basic informatics skill and attitudes relevant to the emerging society and also to equip the student to effectively utilize the digital knowledge resources for the study of Zoology
	Understand the principle of developmental biology and a bird's eye view of sophisticated embryological techniques
	To learn the principles, applications and management of environmental science
	Acquire expertise to perform routine hematological and microbiological techniques
	Understand the problems associated with health and sex
	Understand the importance of nutrition in maintaining health
	Develop an aptitude for research in zoology through field work and project
BCom	Understand the emerging trends and challenges in the industrial and business world
	Analyze the functional application of management
	Understand the application of economics in the context of managerial decision
	making.
	Develop the skills relevant for business communication and understand the role of a company secretary
	Knowledge and understanding of the principles and concepts of financial accounting and develop the skill required for the preparation of financial statements and accounts of various business areas.
	Understand the legal framework influencing business decisions and operations.
	Expand skills in electronic data processing and computer application in business operations.
	Understand the characteristics of an entrepreneur
	Understand the management and administration of companies
	Understand the preparation of different of accounts of various business areas.
	An in-depth knowledge in capital market and banking theory
	Develop the skill for applying appropriate statistical tools and techniques in different business situations.
	Acquire the basic knowledge and understanding of the concepts and practices of

	Income Tax Law in India
	Understand the principles and practice of auditing
MSC Physics	Develop advanced knowledge in classical and Hamiltonian mechanics
	Understand the application of mathematics in solving the problems of physics
	Understand the fundamentals of electronics and optoelectronics
	Understand the basics and applications of modern optics
	Develop advanced knowledge in thermodynamics, statistical physics and quantum mechanics
	Acquire knowledge in various computer programs
	Update knowledge in advanced spectroscopic techniques
	Understand the application of electronics in communication
	Understand the fundamentals of condensed matter physics, nano science, nuclear and particle physics