



**SR & BGNR GOVT. ARTS & SCIENCE COLLEGE**  
**AUTONOMOUS**  
**KHAMMAM – 507002**  
**OUR MOTTO: “ENTER TO LEARN, LEAVE TO SERVE”**



## **COURSE OUTCOMES**

## PG COURSE OUTCOMES

### MSC Computer Science

#### Course Outcomes

Paper Code	Course / Paper Title	Course Outcomes
MSCCS111	<b>Discrete Mathematics</b>	<ol style="list-style-type: none"><li>1. To learn necessary mathematical concepts that are prerequisite for computer related subjects namely database management systems, knowledge based systems and artificial intelligence</li><li>2. To know about first-order logic , quantifier logic and predicator logic</li><li>3. To understand elementary combinations and permutations with repetitions, different methods of solving recurrence relations</li><li>4. To understand concepts and algorithms related to various types of graphs, trees and applications to real life problems</li></ol>
MSCCS112	<b>Java Programming</b>	<ol style="list-style-type: none"><li>1. To learn about OOP language concepts</li><li>2. To learn basic programming using Java</li><li>3. To handle abnormal termination of a program using exception handling</li><li>4. To create flat files and packages</li><li>5. To design UI using Swing and AWT</li><li>6. To have exposure on multithreading</li></ol>
MSCCS113	<b>Operating Systems</b>	<ol style="list-style-type: none"><li>1. To understand functionality of OS</li><li>2. To understand process management and various related algorithms</li><li>3. To Schedule CPU time using scheduling algorithm for processors</li><li>4. To understand memory management and various related algorithms</li><li>5. To understand about different File management algorithms</li><li>6. To understand about different Main Memory allocation techniques</li><li>7. To Compare Memory allocation using Bestfit, Worst fit, and first fit policies</li><li>8. To Apply page replacement policies for dynamic memory management</li><li>9. To study about the significance of virtual memory under memory management.</li></ol>
MSCCS114	<b>Computer Networks</b>	<ol style="list-style-type: none"><li>1. To know about computer network architecture and reference model</li><li>2. To be aware of different types of data link and medium access control protocols</li><li>3. To understand various routing algorithms and internet working</li><li>4. To understand about network protocols for real time applications</li></ol>
MSCCS115	<b>Ooops with Java Lab</b>	<ul style="list-style-type: none"><li>• To train the students in implementing all the concepts learnt as a part of the syllabus using Java as a programming language</li></ul>
MSCCS116	<b>Operating System</b>	<ul style="list-style-type: none"><li>• To train the students in implementing all the</li></ul>

	<b>Lab</b>	concepts learnt as a part of the syllabus using any programming language
<b>MSCCS117</b>	<b>Computer Networks Laboratory</b>	<ul style="list-style-type: none"> <li>To train the students in implementing all the concepts learnt as a part of the syllabus using NS2 tool.</li> </ul>
<b>MSCCS118</b>	<b>Seminar</b>	<ul style="list-style-type: none"> <li>To inculcate presentation skills, discussion skills, listening skills.</li> <li>To improve the ability to think and question critically.</li> </ul>
<b>MSCCS121</b>	<b>Computer Organization</b>	<ol style="list-style-type: none"> <li>To understand the anatomy of the computer and how the functional units operate, interact, and communicate</li> <li>To represent the data at the machine level and to know how computations are performed at the machine level</li> <li>To know the working procedure of various input/output devices and transfer of data from different modes</li> </ol>
<b>MSCCS122</b>	<b>Advanced Java</b>	<ol style="list-style-type: none"> <li>To understand the basics of networking</li> <li>To get an overview about the RPC and RMI applications</li> <li>To learn how to use JDBC technology and different types of drivers</li> <li>To get resultset metadata particulars</li> <li>To know how to illustrate precompiled and call stored procedures</li> <li>To get an idea about server-side technology and to understand how to write, deploy, and invoke java servlets</li> <li>To know the advantages of JSP over other similar technologies</li> <li>To understand how to create and use custom tags and to access databases</li> </ol>
<b>MSCCS123</b>	<b>Unix Network Programming</b>	<ol style="list-style-type: none"> <li>To know UNIX environment and basic UNIX commands</li> <li>To understand fundamentals of shell programming.</li> <li>To practice implementing different CPU scheduling algorithms, page replacement algorithms and dead</li> <li>lock avoidance algorithm</li> <li>To know the different types of file organization techniques</li> </ol>
<b>MSCCS124</b>	<b>Software Engineering</b>	<ol style="list-style-type: none"> <li>To learn the phases of software development</li> <li>To understand process models and process system models</li> <li>To gather, understand, analyze and specify requirements</li> <li>To elicit, analyze and model requirements</li> <li>To understand the components of Unified Modelling Language</li> <li>To know the different types design concepts</li> </ol>

		7. To know the metrics for different software and analyze the quality of a software
<b>MSCCS125</b>	<b>Advanced java laboratory</b>	<ul style="list-style-type: none"> <li>To train the students in implementing all the concepts learnt as a part of the syllabus using Java, Servlets and JSP with database connectivity.</li> </ul>
<b>MSCCS126</b>	<b>Unix Network Programming laboratory</b>	<ul style="list-style-type: none"> <li>To train the students in implementing all the concepts learnt as a part of the syllabus in the UNIX environment.</li> </ul>
<b>MSCCS127</b>	<b>Software Engineering laboratory</b>	<ul style="list-style-type: none"> <li>To train the students in implementing all the concepts learnt as a part of the syllabus using different CASE tools.</li> </ul>
<b>MSCCS128</b>	<b>Seminar</b>	<ul style="list-style-type: none"> <li>To inculcate presentation skills, discussion skills, listening skills.</li> <li>To improve the ability to think and question critically.</li> </ul>
<b>MSCCS211</b>	<b>Automata Theory and Finite Languages</b>	<ol style="list-style-type: none"> <li>To construct finite state machines and the equivalent regular expressions</li> <li>To identifying the given language is regular or not</li> <li>To design pushdown automata and the equivalent context free grammars</li> <li>To design Turing machines</li> </ol>
<b>MSCCS212</b>	<b>Data Warehousing and Mining</b>	<ol style="list-style-type: none"> <li>To know the fundamental theories and concepts of data warehouse and data mining</li> <li>To be aware of pre-processing techniques, basic algorithms and techniques for mining frequent patterns, associations and correlations</li> <li>To understand popular classification and prediction techniques</li> <li>To know about clustering techniques, web mining and business applications of data mining</li> </ol>
<b>MSCCS213</b>	<b>Elective-1 (a) .Net Programming</b>	<ol style="list-style-type: none"> <li>To gain programming knowledge in .Net Framework.</li> <li>To introduce .Net IDE Component Framework.</li> <li>To know the programming concepts in .Net Framework.</li> <li>To understand of making use of various controls of .Net</li> <li>To design various console, window, web and database applications.</li> </ol>
	<b>Elective-1 (b) Python Programming</b>	<ol style="list-style-type: none"> <li>To have exposure on the basic programming constructs of Python</li> <li>To know the scope of applicability of Python as a programming language in different domains</li> <li>To developing adequate skills in Python</li> </ol>

		<p>programming</p> <p>4. To implement of various applications using Python</p>
MSCCS214	<p><b>Elective-2 (a)</b> <b>PHP Programming</b></p>	<ol style="list-style-type: none"> <li>1. To aware of www and web evolution</li> <li>2. To know about client side scripting languages</li> <li>3. To design static web pages using HTML Tags, CSS properties, java script snippets</li> <li>4. To get familiar with java script functions, events and objects</li> <li>5. To know about server side scripting languages</li> <li>6. To get accessing the data from the database using MySQL and different types of databases</li> </ol>
	<p><b>Elective-2 (b)</b> <b>Programming with R</b></p>	<ol style="list-style-type: none"> <li>1. To know the basics of statistical computing and data analysis</li> <li>2. To explore the usage of R for analytical programming</li> <li>3. To implement data structures in R</li> <li>4. To know about R loop functions and debugging tools</li> <li>5. To be aware of Object-oriented programming concepts in R</li> <li>6. To visualize the data in R</li> <li>7. To write custom R functions</li> </ol>
MSCCS215	<p><b>Data Warehousing And Mining Lab</b></p>	<ol style="list-style-type: none"> <li>1. To train the students in implementing all the concepts learnt as a part of the syllabus using WEKA tool.</li> <li>2. Analyse datasets with the following unsupervised learning methods: for dimensionality reduction, principal component analysis; for grouping, kmeans clustering and hierarchical clustering.</li> </ol>
MSCCS216	<p><b>Elective-1 (a)</b> <b>.Net Programming Lab</b></p>	<ul style="list-style-type: none"> <li>• To train the students in developing console, windows, web and database applications on VB.NET platform.</li> </ul>
	<p><b>Elective-1 (b)</b> <b>Python Programming Lab</b></p>	<ul style="list-style-type: none"> <li>• To train the students in implementing all the concepts learnt as a part of the syllabus using different packages of Python.</li> </ul>
MSCCS217	<p><b>Elective-2 (a)</b> <b>PHP Programming Lab</b></p>	<ul style="list-style-type: none"> <li>• To train the students in developing variety of web applications using different client and server side scripting languages.</li> </ul>
	<p><b>Elective-2 (b)</b> <b>Programming with R Lab</b></p>	<ul style="list-style-type: none"> <li>• To train the students in implementing all the concepts learnt as a part of the syllabus in R environment</li> </ul>
MSCCS218	<p><b>Seminar</b></p>	<ul style="list-style-type: none"> <li>• To inculcate presentation skills, discussion skills, listening skills.</li> </ul>
		<ul style="list-style-type: none"> <li>• To improve the ability to think and question critically.</li> </ul>

<p><b>MSCCS221</b></p>	<p><b>Artificial Intelligence</b></p>	<ol style="list-style-type: none"> <li>1. To understand concept of knowledge representation and predicate logic and transform the real life information in different representation.</li> <li>2. To understand state space and its searching strategies.</li> <li>3. To understand machine learning concepts and range of problems that can be handled by machine learning.</li> <li>4. To understand the numerous applications and huge possibilities in the field of AI .</li> <li>5. Solve real-world problems in organizational processes and workflows by applying critical thinking, problem-solving, and cognitive computing skills.</li> </ol>
<p><b>MSCCS222</b></p>	<p><b>Elective -1 (a) Cryptography and Net Work Security</b></p>	<ol style="list-style-type: none"> <li>1. To learn fundamentals of cryptography and its application to network security.</li> <li>2. To understand network security threats, security services, and countermeasures.</li> <li>3. To acquire background on well known network security protocols such as IPsec, SSL, and WEP.</li> <li>4. To acquire background on hash functions; authentication; firewalls; intrusion detection techniques.</li> <li>5. To classify the symmetric encryption techniques</li> <li>6. To Illustrate various Public key cryptographic techniques</li> <li>7. To know the authentication and hash algorithms and authentication applications</li> </ol>
	<p><b>Elective -1 (b) Mobile Computing</b></p>	<ol style="list-style-type: none"> <li>1. To know about essentials of wireless networks and protocols</li> <li>2. To understand wireless network communication, LAN technology and standards</li> <li>3. To study about mobile computing and medium access control mechanisms</li> <li>4. To understand mobile network and transport layer protocols</li> </ol>

<b>MSCCS223</b>	<b>Elective -2 (a) Big Data Analytics</b>	<ol style="list-style-type: none"> <li>1. To know about essentials of Big data management and applications</li> <li>2. To have an idea of data analytics and reporting</li> <li>3. To explore hadoop map reduce framework for developing Big data applications</li> <li>4. To develop big data applications capable with Hadoop distributed file system</li> </ol>
	<b>Elective -2 (b) Cloud Computing</b>	<ol style="list-style-type: none"> <li>1. To understand the principles and paradigm of Cloud Computing</li> <li>2. To have the ability to design and deploy Cloud Infrastructure</li> <li>3. To understand cloud security issues and solutions</li> <li>4. To analyze the virtualization and cloud computing concepts.</li> <li>5. To learn the architecture, deployment models, and infrastructure models of Cloud Computing.</li> </ol>
<b>MSCCS224</b>	<b>Major Project Work</b>	<ol style="list-style-type: none"> <li>1. To apply the software engineering principles on a real software project</li> <li>2. To have problem based and project based learning</li> <li>3. To choose major project in one of the selected areas of specialization with substantial multi-disciplinary component</li> <li>4. To nurture the analytical and research skills</li> <li>5. To develop team work, leadership and interpersonal skills</li> </ol>
<b>MSCCS225</b>	<b>Seminar</b>	<ul style="list-style-type: none"> <li>• To inculcate presentation skills, discussion skills, listening skills.</li> <li>• To improve the ability to think and question critically.</li> </ul>



## **MCOM(GENERAL)**

### **SEMESTER – I – COURSE OUTCOMES**

<b>Code</b>	<b>Paper Title</b>	<b>Course Outcomes</b>
<b>101</b>	<b>Business Environment</b>	<p>CO1 – The students will be able to understand the concept of business environment its meaning, scope and importance.</p> <p>CO2 – To give an insight into Economic environment, Economic system, Mixed economy and different Economic policies.</p> <p>CO3 – To make the students aware about legal framework of business regulatory institutions like...TRAI-SEBI-IRDA etc.,</p> <p>CO4 – To enable the students to understand the socio cultural environment, social responsibility of business and social audit in India.</p> <p>CO4 – To give students an understanding of the various constituents of the local and global business environments.</p>
<b>102</b>	<b>Managerial Economics</b>	<p>CO1 – To help the students form a clear idea of Managerial Economics.</p> <p>CO2 –To enable the students understand determination of price under different market forms.</p> <p>CO3 – To enable the students understand the situation of consumer and producer equilibrium.</p> <p>CO4 – To describe the concept of Price and Output decisions in Perfect Competition.</p> <p>CO5- To understand the concept of industry and factors influencing size of firm.</p>
<b>103</b>	<b>Corporate Financial Accounting</b>	<p>CO1- To give a broad view of the legal provisions relating to company accounts and followed for the preparation of final accounts of companies as per Companies Act 2013.</p> <p>CO2- To give a detailed view of basic merger and acquisition process in either buying or selling companies.</p> <p>CO3- To understand the concept of Inflation Accounting and different approaches of Inflation Accounting.</p> <p>CO4- It helps the students to understand accounting for personal investments in the light of applicable accounting standard as also effects of cum interest/dividend and ex interest/dividend prices on profits/loss and income. To make them understand valuation of investment.</p> <p>CO5- The students will be able to understand the concept of Double Accounting its nature and importance and also know the how to prepare final accounts of Electricity Company Undertakings.</p>



104	<b>Quantitative Techniques</b>	<p>CO1- To bring out clearly the importance of statistics in solving different research problems</p> <p>CO2- To enable the students in-depth understanding of the concepts of probability, sampling, correlation and their applicability</p> <p>CO3- To help the students gain a comprehensive view of the usage and importance of SPSS in solving different statistical problems.</p> <p>CO4-To enable the students understand the Difference between Parametric and Non-parametric tests.</p>
105	<b>Organization Theory &amp; Behaviour</b>	<p>CO1- To equip the students with the basic idea and introduction on organizational behavior as a concept.</p> <p>CO2- To give a light on the concept of Individual Behavior in Organization.</p> <p>CO3 Explain and helps the students to gain more knowledge on Group Behavior.</p> <p>CO4 To understand the concept of Behavioural basis organization process.</p> <p>CO5- To introduce the concept of organizational Communication and leadership.</p>

## SEMESTER - II – COURSE OUTCOMES

Code	Paper Title	Course Outcomes
201	<b>Marketing Management</b>	<p>CO1 – Understand the Introduction of Marketing Management; its Definition, Nature, Scope &amp; Importance; its Evolution, Role, Functions &amp; Tasks, and Recent Trends</p> <p>CO2 – Assess Market Analysis &amp; Environment, Competitive Marketing Strategies, Market Segmentation, Positioning, Consumer Behavior, and Marketing research</p> <p>CO3 – Know about Product &amp; Pricing Decisions, Price Concepts, Methods, Pricing Strategies and Price Changes</p> <p>CO4 – Understand the Place Decisions, Channel Management Decisions, Physical Distribution, Market Distribution, Direct Marketing</p> <p>CO5 – Know about the Promotion Decisions, Integrated Marketing Communication, Advertising, Personal Selling, Recruitment, Sales promotion</p>
202	<b>Financial Management</b>	<p>CO1 – Assess the Introduction of Finance Function, Forms of Business Organization, Time Value of Money, Future Values and their Computation.</p> <p>CO2 – Know about Financing Decision, Capital Structure, Cost of Capital, Net Income Approach, Capital Structure Decision, Leverage Analysis</p> <p>CO3 – Understand the Investment Decision, Capital Budgeting Decision, Estimation of Cash Flows, Payback Period, Benefit-Cost Ratio, Capital Rationing, Inflation &amp; Capital Budgeting</p> <p>CO4 – Know about Dividend Decision, Models, Walter and Gordon's Models, Miller and Modigliani Model, Financial Signaling, Dividend Decision, Managerial Considerations</p> <p>CO5 – Assess the Working Capital Management, Cash and Liquidity Management, Investment of Surplus Funds, Credit Management, Inventory Management, Working Capital Financing</p>

203	<b>Human Resource Management</b>	<p>CO1 – Know about Human Resource Management, Models of HRM, Workforce Diversity, Employee Engagement, Talent Management, Competency Management, Internationalization of HRM</p> <p>CO2 – Understand the Human Resource Planning, Job Analysis, Job Description, Job Specification, Job Design Concepts, Job Enrichment, and Recruitment Process &amp; Methods</p> <p>CO3 – Know about Selection, Selection Process, Selection Tests, Types of Employment Tests, Online Testing, Employment Interview, General Types of Interviews and Interviewing Problems helps in get employed in a better way</p> <p>CO4 – Assess the Training &amp; Development, Socialization, Training and Development Process, Job Training Methods, Employee Development, Evaluating Training and Development Effectiveness</p> <p>CO5 – Understand the Performance Management, Performance Appraisal Process, Career Planning &amp; Development, Career Development Methods, Workshops, and Personal Development Plans</p>
204	<b>Management Accounting</b>	<p>CO1 – Students learn to know about the Introduction of Management Accounting, Cost Behavior &amp; Decision - Making, Elements of Costs, Classification of Costs, and Relevant Costs &amp; Opportunity Costs</p> <p>CO2 – Assess the Cost Analysis for Decision Making, Marginal Costing, CVP Analysis, Concept of Break-Even Point, Profit-Volume Graph and Profit Planning, and Managerial Applications in Decision Making</p> <p>CO3 – Understand Management Accounting for Planning &amp; Control, Budgetary Control, Standard Costing, Standards Setting, Variance Analysis, Labour, Overhead and Sales Variances</p> <p>CO4 – Know about the Management Control System &amp; Responsibility Accounting,</p>

		<p>Responsibility Centers, Transfer Pricing, Performance Reports, Advantages of Transfer Pricing and Responsibility Accounting.</p> <p>CO5 – Assess the Activity Based Costing &amp; System, ABC System Vs. Traditional Costing System, ABC for Marketing, Selling &amp; Distribution Expenses, ABC for Service Companies, and Pros &amp; Cons of ABC</p>
205	<p align="center"><b>Computer Applications in Accounting</b></p>	<p>CO1 – Understand the Computerized Accounting, Accounting Packages, Features of Tally, and Gateway of Tally</p> <p>CO2 – Know about the Creation of Account Groups, Voucher Types, Inventory Management in Tally, Inventory Journals, Delivery Notes, and Treatment &amp; Posting of Sales, Tax, VAT, &amp; other related Taxes.</p> <p>CO3 – Assess the Payroll in Tally, Exploring Payroll in Tally.ERP9, Describing Salary Disbursement; Create a Tax Ledger, TDS Vouchers, Tax Collected at Source in Tally.ERP9, TCS Reports in Tally.ERP9.</p> <p>CO4 – Know about Financial Reporting, Statement of Accounts, Balance Sheet, Generation of Financial Reports other than Financial Statements, and Treatment of Income Tax &amp; TDS leads to learn practical approaches.</p> <p>CO5 – Understand the Special Features in Tally, ODBC Connectivity, Tax Ledgers, Security in Accounting Packages, Virus Problems, Security Protocols for Accounting Packages, Backup &amp; Restore</p>

## SEMESTER - III - COURSE OUTCOMES

Code	Course title	COs
301	<b>Strategic management</b>	<p>By studying this course, student is able to</p> <p>CO1 – Know the concepts of strategic management and its significance, objectives, goals and elements.</p> <p>CO2 – Understand about characteristics of environment, factors affecting environmental scanning and its methods and techniques used in organisational appraisal.</p> <p>CO3 – know about corporate level strategies ,and its cost leadership strategy.</p> <p>Co4 – Know about project implementation, its types of structure and role of leaders.</p> <p>CO5 – Understands importance of strategic evaluation, and its barriers and techniques.</p>
302	<b>E-Business</b>	<p>CO1 – Know about E- Business models ,its advantages and limitations of E-Business, and about mobile commerce , its E-Business trades.</p> <p>CO2 – Understand about internet and intranet its trends , growth , applications, Extranet applications. CO3 – Assess about E-Marketing its area , planning ,strategies and its internet advertising and its E-Payment system .</p> <p>CO4 – Know about security attacking methods, its Hacking security tools, about to evaluate about firewall security.</p> <p>CO5 – Understand about E- Business Web technologies, and concepts of testing and evaluating websites and awareness about websites, and multimedia like graphics.</p>
311	<b>Financial Markets &amp; Institutions</b>	<p>CO1 – Theoretical understanding about concepts of financial system , its structure , functions and role of financial system, its components.</p> <p>CO2 – Understand about money markets and its instruments , role and challenges in India.</p> <p>CO3 – Know about concepts of primary market its functions, significance of capital market, its structure, and its recent developments.</p> <p>CO4 – Assesse about stock exchange , its players , significance ,participants in stock exchange market which enhances the skills of the students.</p> <p>CO5 – Understands about institutional regulatory framework, its functions and role of RBI and capital market.</p>

312	<p align="center"><b>Security Analysis &amp; Portfolio Management</b></p>	<p>CO1 – Know about concepts of investment , types , process, primary and secondary markets theoretically.</p> <p>CO2 –Understand about fundamental analysis , and its types of risks.</p> <p>CO3 – Know about valuation of equity shares, dividend discount models, and bond pricing theorems.</p> <p>CO4 – Analysis about Risk return analysis , its approaches in portfolio construction and some other models.</p> <p>CO5 – Evaluation of concepts, objectives, portfolio performance measures.</p>
313	<p align="center"><b>Corporate Tax Management</b></p>	<p>CO1 - Know the concepts of corporate incometax , residential status of company , exempted incomes and tax free incomes with special reference to corporate assessee.</p> <p>CO2 – Understand about different types of heads of income, and its deductions, able to solve problems.</p> <p>CO3 – Know about tax planning, financial management decisions, concepts of tax planning and methods of tax planning. Able to analysis about capital structure, factors affecting dividend policy, tax implications for shareholders.</p> <p>CO4 – Know about Restructuring and managerial decisions, amalgamation concessions to amalgamating company.</p> <p>CO5 – Understand about special tax provisions for certain undertakings like telecommunication, power sector industries and tax planning provisions.</p>

## SEMESTER – IV – COURSE OUTCOMES

Code	Course title	COs
401	<b>Business Research Methods</b>	<p>CO1 – To introduce about different concepts related to research.</p> <p>CO2 – To have a practical knowledge of research process, imparts knowledge on research</p> <p>CO3 – To demonstrate different research design and measurement of data.</p> <p>CO4 – To understand about how to collect and interpret the research data.</p> <p>CO5 – To provide in-depth view about reporting research data.</p>
402	<b>Financial Derivatives</b>	<p>CO1 – To demonstrate knowledge of all aspects of derivative markets.</p> <p>CO2 – To identify how derivative instruments can be used to hedge risk.</p> <p>CO3 – To understand and use binomial tree model and black scholes model.</p> <p>CO4 – To understand basic risk management and trading strategies.</p> <p>CO5- To evaluate the risk and payoffs associated with trade.</p>
403	<b>Financial Services Management</b>	<p>CO1- To understand different types of financial services and their role.</p> <p>CO2- To explain about merchant banking and credit rating and their regulations.</p> <p>CO3- To illustrate about problems and prospects of mutual funds.</p> <p>CO4 – To understand about venture capital and lease financing.</p> <p>CO5 – To have a practical knowledge about factoring and fortfieting services.</p>
404	<b>Strategic Financial Management</b>	<p>CO1- To introduce about strategic financial planning and its regulatory framework.</p> <p>CO2- To explain about debt analysis and management, practical problems on EBIT and EPS.</p> <p>CO3-To understand different approaches to corporate valuation and practical problems on it.</p> <p>CO4 – To have a practical knowledge about value based management and performance management. CO5 – To have a theoretical understanding of corporate restructuring framework and re-engineering.</p>



405	<b>Financial Derivatives</b>	<p>CO1 - Understand the concept of various derivative products such as futures, options, and swaps;</p> <p>CO2 - To apply hedging models in assessing price risk of various derivatives;</p> <p>CO3 - To understand the basics of the various instruments operating in the stock market along with their trading mechanism and regulations</p> <p>CO4 - To analyse and estimate value at risk for various derivatives;</p> <p>CO5 - To comprehend various derivative products and their performance in Indian and Global Markets; CO6 - To integrate the understanding on various derivative products and their performance in Indian and Global Markets.</p>
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### DEPARTMENT OF BOTANY

<b>Course Outcomes</b>		
<b>Semester-I</b>		
<b>Course code</b>	<b>Course title</b>	<b>Course outcomes</b>
BOT101	Biology of Diversity of Algae, Fungi, Bacteria and Viruses	This course aims to understand the origin and evolution of life, to know more about micro organisms bacteria and viruses, the diversity of lower plants their classification, structure and growth
BOT102	Biology and Diversity of Bryophyta, Pteridophyta and Cycadophyta	<p>1. Students are able to focus on Morphology, Anatomy, Reproduction and evolution in Bryophyta, Pteridophyta and Cycadophyta.</p> <p>2. It is also useful to conserve the lower group of plants and Cycadophyta</p>
BOT103	Systematics of Magnoliophyta and Ethnobotany	<p>1. Students are able to understand about the diversity of higher plants, their description, identification nomenclature and their placement in the recent systems classification involving recent trends in Botany</p> <p>2. The students develop the knowledge of identification of plants growing in our surrounding areas by using Floras, Monographs, Herbaria etc.</p>

BOT104	Biostatistics, Techniques in Plant Biology and Bioinformatics	<ol style="list-style-type: none"> <li>1. This course imparts the knowledge of basic practical methods to solve problems</li> <li>2. the students are able to appreciate the importance of statistics in research and prepare them for their research publications</li> <li>3. it is useful to create, select and apply appropriate technique, resources, and modern instruments and equipments for biochemical estimations, Molecular biology, Biotechnology, Plant Tissue Culture experiments, Cellular and Physiological experiments.</li> <li>4. It is also to utilise the IT in Biological sciences, with focus on basic parameters like Computer design, OS, Networking, Data Bases design and upgradation. Usage of various tools and softwares for studying the various Biological Molecular aspects</li> </ol>
<b>Semester-II</b>		
BOT201	Cytology, Genetics and Cytogenetics	<ol style="list-style-type: none"> <li>1. It deals with Mendelian and Non Mendelian inheritance, quantitative genetics, prokaryotic and eukaryotic genome structure, gene, function and regulation</li> <li>2. To understand the pattern of inheritance in various life forms</li> <li>3. It is also useful to develop a strong fundamentals, basics for the study of molecular genetics</li> <li>4. This knowledge will be applied in the crop improvement in the novel traits for future generations</li> </ol>

BOT202	Ecology, Evolution Phytogeography	<p>1. It focuses on environmental impact assessment, energy resources, various types of environmental pollution, water pollution conservation strategies with sustainable management</p> <p>2. Students will understand factors leading to environmental degradation, their reason and their impact on the environment.</p> <p>3. Student will able to understand the distribution of plants and their diversity with respect to geographical area.</p> <p>4. Evolution subject deals with the origin of life on the earth, progressive changes in the environment lead to the origin of species and geological time scale</p>
BOT203	Plant Development and Reproductive Biology	<p>1. This course aims to make the students to understand about equipments with the fundamentals and mechanisms associated with the development, differentiation and morphogenesis of various plant organs.</p> <p>2. It is also associated with metabolic and physiological changes during growth and development .</p> <p>3. It aims to understand the students about the structure and function of reproductive organs and their significance in pollination, fertilization, embryogenesis and endosperm.</p> <p>4. This will help to apply the knowledge in agriculture, horticulture for the production of hybrid, novel and rare plants.</p> <p>5. The allergy problems arising by pollen can be justified</p>
BOT204	Plant Resources Utilization	<p>1. This paper aims with the understanding of diversification, utility and conservation strategies of natural resources.</p> <p>2. This course is helpful to understand the student about various types of economically useful plants and their uses.</p> <p>3. Students can understand the conservation of various types of economically useful plants for future use.</p>

**SCHCSUP-III**

<p>BOT301</p>	<p>Plant Physiology and Biochemistry</p>	<p>1. This course aims to educate about the mechanism of biophysical and biochemical processes, transpiration, ion uptake, translocation of organic solutes                  2. Students will understand more about photo chemistry, photo synthesis and path ways for the synthesis of starch and sucrose. It also aims to understand the process of catabolism like respiration and nitrogen fixation (biological), regulation of nif genes in nitrogen fixing organisms and their transfer into higher plants                  3 This course is aim to understand the role phytohormones and their physiological effects on growth and development, flowering process among the higher plants                  4. It is useful to know more about the structural and the functional aspects of biomolecular and their metabolism</p>
<p>BOT302</p>	<p>Molecular Biology and Bioengineering</p>	<p>1. This course will help the students to acquire the knowledge about structure and functions of DNA, RNA, transcription and translation among the prokaryotes and eukaryotes                  2. It is also useful to know about the structure and function of restriction enzymes and cloning vectors and transfer of genes                  3. to understand about the application of different types of markers like RFLP, RAPD and AFLP in r-DNA technology for the production of transgenic plants and organisms</p>
<p>BOT303</p>	<p>Elective-I</p>	
<p>Elective-I (a)</p>	<p>Plant Biosystematics</p>	<p>1. The course is designed to understand more about plant breeding systems and hybridization technology.                  2. It is also useful to understand about numerical taxonomy, cladistics and molecular biological approaches for classification of plants</p>
<p>Elective-I (b)</p>	<p>Microbial Ecology</p>	<p>1. The paper deals with the microbial interactions, plant microbes interactions and nitrogen fixation in root nodules                  2. Students can understand the microbial communities in nature and their adaptations to environmental conditions                  3. It aims to impart the knowledge of distribution of micro organisms in air, water and soil, role of microbes in nutrient cycles like Carbon, Nitrogen, Phosphorus, Sulphur.                  4. Students will understand the role of microbial organisms in sewage treatment, biodegradation of pesticides, leaching and biomagnifications</p>

Elective-I (c)	Medicinal Plant Chemistry and Pharmacognosy	<ol style="list-style-type: none"> <li>1. This course aims to increase the understanding of the students about the phytochemistry, medicinal plants in human welfare</li> <li>2. Students also know more about active principle of secondary Metabolites-alkaloids, flavonoids, steroids, terpenoids and phenolic constituents.</li> <li>3. Students also know more about Therapeutic uses of plant drugs and how to extract crude drugs from various parts of the plants?</li> </ol>
BOT304	Elective-II	
Elective-II (a)	Plant Cell, Tissue and Organ Culture	<ol style="list-style-type: none"> <li>1. This course aims to understand the students about the basic properties of plant cell, cell differentiation, morphogenesis etc.</li> <li>2. Students will learn about the role of micro and micronutrients on the growth of cultured cells</li> <li>3. Practically students can handle instruments to carry out inoculation, intubation and field transfer techniques of plants</li> <li>4. Students will develop the skill of the production of novel plant, rare plants, and somatic hybrids by using plant tissue culture techniques'</li> <li>5. They learn the skill of micro propagation and cryopreservation of Germ plasm.</li> </ol>
Elective-II (b)	Advanced Plant Physiology	<ol style="list-style-type: none"> <li>1. This course designed to provide the knowledge about the molecular mechanism of photo synthetic systems protein transfer in chloroplast</li> <li>2. It also imparts the understanding of calcium modulation proteins, signal perception and transduction</li> <li>3. Students can understand the physiology of light induced response at cellular level</li> <li>4. It imparts the knowledge of molecular biology aspects of plants stress response</li> </ol>
Elective-II (c)	Plant Breeding	<ol style="list-style-type: none"> <li>1. This course focuses on gene interactions, multiple gene hypothesis and sex determination in <i>Drosophila</i>. It is designed to understand the students more about linkage, crossing over and epigenetics</li> <li>2. It also aims to know more about breeding techniques for the production of hybrid plants in crop improvement programme</li> </ol>

SEMESTER-IV		
BOT401	Biodiversity: Conservation and Management	<p>1. This paper is designed to understand the students more about the distribution of biodiversity indicators and benefits of biodiversity etc.</p> <p>2. This paper deals with the understanding of threats to biodiversity, IUCN red list, <i>in situ</i> conservation methods and <i>ex situ</i> conservation methods of biodiversity</p> <p>3. Students can understand about biogeographic zones, forest biodiversity, biodiversity hot spots, floral diversity of wild and domesticated plants, policies to conserve biodiversity including financial incentives, market based instruments, National Legislations to conserve biodiversity</p>
BOT402	Plant Biotechnology	<p>1. This course will help the students to acquire the skills of r- DNA technology for the transfer of genes for the production of transgenic plants</p> <p>2. To gain the knowledge of strategies for engineering of biotic and abiotic resistant plants</p> <p>3. It also acquires the knowledge to design the plants as bioreactors for the production of useful compounds to man kind</p>
BOT403	Elective-I	
Elective-I (a)	Ethnobotany	<p>1. This course is designed to understand about the tribal people of forest area and their role for the conservation of useful plants for the welfare of human beings</p> <p>2. Students can understand the diversification of tribal groups of forest areas and their interaction with plants and their magical religious beliefs, social customs taboos</p> <p>3. Students can gain the knowledge of categorising ethnomedicine and ethnoveterinary medicine. And role of ethnobotany in the conservation NPGR and Biodiversity.</p>
Elective-I (b)	Crop Improvement	<p>1. This course focuses on gene interactions, multiple gene hypothesis and sex determination in <i>Drosophila</i> it is designed to understand the students more about linkage, crossing over and epigenetic</p> <p>2. It also aims to know more about breeding techniques for the production of hybrid plants in crop improvement programme</p> <p>3. Students can acquire the knowledge to induce polyploidy breeding for abiotic and biotic resistant plant production in crop improvement programme</p>

Elective-I (c)	Agricultural Biotechnology	<ol style="list-style-type: none"> <li>1. This course is designed to understand the origin of agriculture, mutation breeding for crop improvement.</li> <li>2. Students can understand the usage of eco friendly, biofertilizers and biocontrol methods</li> <li>3. This paper inculcate the knowledge of modern agriculture methods and role of national and International organizations in crop improvement</li> </ol>
BOT404	Elective-II	
Elective-II (a)	Biocontrol of Plant Diseases and Insect pests	<ol style="list-style-type: none"> <li>1. This course aims to understand the usage of botanical insecticide for the biocontrol of fungal bacterial and viral diseases of plants</li> <li>2. To understand more about the biology of fungi and bacteria for the control of insects, genetic engineering approaches for weed resistance</li> </ol>
Elective-II (b)	Industrial Microbiology	<ol style="list-style-type: none"> <li>1. The objective of the present course content is to provide the information about fermentation technology for the production of citric acid, penicillin, ethanol, beer etc.</li> <li>2. Students will understand the role of bacteria and fungi for the large scale production of useful products for man kind like cheese, single cell protein beer etc.</li> </ol>
Elective-II (c)	Applied Phycology	<ol style="list-style-type: none"> <li>1. This paper is designed to understand about the economic importance of the algae for the industrial production of cosmetics pharmaceutical, agricultural and biofuel</li> <li>2. It also aims to impart the knowledge of single cell protein production, mass cultivation and commercial value of sea weeds.</li> </ol>

## CHEMISTRY

### Course Outcomes:

Coursecode	Course Title	Course Outcomes
		At the end of the course learners able to:
1CHT2	Organic Chemistry	<ul style="list-style-type: none"> <li>• Identify chirality and determine the absolute configuration.</li> <li>• Write mechanism of organic reactions involving reactive intermediates and concerted processes</li> <li>• Apply these reactions in organic synthesis</li> <li>• Understand the structure elucidation and synthesis of Natural products.</li> </ul>
1CHP2	Organic Chemistry Practicals	<ul style="list-style-type: none"> <li>• Learn the basic techniques and safety measures required to perform the experiments in laboratory.</li> <li>• Prepare some important organic molecules by applying methodologies of some well-known name reactions.</li> </ul>



		<ul style="list-style-type: none"> <li>• Determine the physical constants.</li> </ul>
2CHT6	Organic Chemistry	<ul style="list-style-type: none"> <li>• Study the various reactions and reagents to design and apply in organic synthesis in a logical manner.</li> <li>• Evaluate the stability of various conformers of acyclic and cyclic systems using various effects.</li> <li>• Understand the concepts of aromaticity and properties of aromatic compounds.</li> </ul>
2CHP5	Organic Chemistry Practicals	<ul style="list-style-type: none"> <li>• Identify extra elements present in organic compounds.</li> <li>• Identify the functional groups present in organic compounds.</li> <li>• Determine the physical constants.</li> </ul>

		<ul style="list-style-type: none"> <li>• Apply the knowledge of photochemical laws in estimation of chromophores using Colorimetry.</li> <li>• Verify Freundlich adsorption isotherms experimentally.</li> </ul>
3CHT9	Spectroscopy	<ul style="list-style-type: none"> <li>• Understand the principles and applications of <math>^{13}\text{C}</math>-NMR, 2D-NMR spectroscopy in structure elucidation of organic molecules.</li> <li>• Learn the principles of Mass spectrometry methods and fragmentation pattern of organic molecules.</li> <li>• Understand the principles and applications of photoelectron and Mössbauer spectroscopy.</li> <li>• Use of the spectroscopic techniques in structure elucidation of molecules.</li> </ul>
3CHT10	Synthetic Organic Chemistry-I	<ul style="list-style-type: none"> <li>• Appreciate the photochemical phenomena by light and apply photochemistry concepts in organic synthesis.</li> <li>• Comprehend the orbital interactions and orbital symmetry correlations of various pericyclic reactions.</li> <li>• Use various reagents in formation of C-C bond formation in organic synthesis.</li> <li>• Use of important oxidants and reductants in organic reactions in a logical manner.</li> </ul>
3CHT11	Bioinorganic and Supramolecular Chemistry	<ul style="list-style-type: none"> <li>• Utilize the principles of transition metal coordination complexes in understanding functions of biological systems.</li> <li>• Know the functions of Metalloproteins and Metalloenzymes.</li> <li>• Understand the Metal complexes and their interaction with nucleic acids.</li> <li>• Learn the concepts and applications of supramolecular chemistry.</li> </ul>
3CHT12	Inorganic Photochemistry and Chemistry of Materials	<ul style="list-style-type: none"> <li>• Understand the Photochemistry of metal complexes.</li> <li>• Study the structures, classification and applications of ceramics.</li> <li>• Learn the methods of preparation of nanoparticles.</li> <li>• Characterization of nanomaterials using various spectral techniques.</li> </ul>
3CHT13	General Organic Chemistry-I	<ul style="list-style-type: none"> <li>• Learn the synthesis and properties of Heterocyclic compounds.</li> <li>• Study of special mechanistic aspects in organic chemistry.</li> <li>• Apply the advanced methods and green approach in organic synthesis.</li> </ul>

3CHT14	Natural Products	<ul style="list-style-type: none"> <li>• Learn the Classification, Isolation, Separation and Identification of Natural products.</li> <li>• Structure elucidation, stereochemistry and synthesis of Natural Products.</li> </ul>
3CHT15	Quantum Chemistry, Kinetics and Electrochemistry	<ul style="list-style-type: none"> <li>• Realize theories of chemical bonding and their applications.</li> <li>• Know the concept of hybridization and quantum mechanical treatment of hybrid orbitals.</li> <li>• Understand the mechanism of Electron transfer, oscillatory,</li> </ul>

		<p>Branched Chain, Unimolecular reactions.</p> <ul style="list-style-type: none"> <li>• Express the mechanism of Battery devices and plan and design new devices based on the acquired knowledge.</li> </ul>
3CHT16	Group Theory & Spectroscopy	<ul style="list-style-type: none"> <li>• Present Matrix representation of symmetry operations and point groups.</li> <li>• Understand Group theoretical approach for UV transitions IR and Raman active modes of water molecule.</li> <li>• Learn Structure analysis using X-Ray, Electron and Neutron diffraction.</li> <li>• Understand Basic and principles applications of Photoelectron, Electron-Spin resonance, <sup>13</sup>C-NMR, ATR ORD and CD Spectroscopy.</li> </ul>
(3CHO1)	Environmental Chemistry	<ul style="list-style-type: none"> <li>• Understand the Environment and Natural cycles.</li> <li>• Learn adverse effects of Air pollution, Radioactive pollution and its control measures.</li> <li>• Aware about the water pollution, water quality parameters and Sewage treatment.</li> <li>• Study the Soil pollution and Solid waste disposal methods</li> <li>• Learnt Disposal methods of radioactive wastes.</li> </ul>
3CHP7	Preparation of Complexes and their characterization by Physiochemical techniques	<ul style="list-style-type: none"> <li>• Experience in preparation of Complexes.</li> <li>• Characterize the complexes by Physiochemical techniques.</li> </ul>
3CHP8	Analysis of Ternary mixtures and Complex materials	<ul style="list-style-type: none"> <li>• Conduct experiments for identify inorganic compounds.</li> <li>• Characterize inorganic compounds</li> </ul>
3CHP9	Preparation of organic compounds and Spectral analysis.	<ul style="list-style-type: none"> <li>• Get Hands on experience in organic synthesis.</li> <li>• Determine the structure of organic compounds using Spectral analysis.</li> </ul>
3CHP10	Organic mixture analysis (with two component mixture)	<ul style="list-style-type: none"> <li>• Separate the organic components present in mixture.</li> <li>• Identify the functional groups present in organic compound.</li> </ul>
3CHP11	Kinetics	<ul style="list-style-type: none"> <li>• Explain the principle behind the experiments performed in the laboratory.</li> <li>• Plan and Perform experiments and interpret experimental results.</li> </ul>
3CHP12	Instrumentation	<ul style="list-style-type: none"> <li>• Handle Potentiometers to carry out quantitative estimations and P<sup>H</sup> meters for qualitative analysis.</li> </ul>

4CHT17	Analytical and Physical Chemistry	<ul style="list-style-type: none"> <li>• Learn the principles and applications of chromatography</li> <li>• Learn the principles and applications of TGA, DTG, DTA, and DSC.</li> <li>• Understand the Photo physical and chemical processes, and to calculate the Quantum yield.</li> <li>• Understand the Thermodynamic criteria for non-equilibrium states, entropy production and entropy flow</li> </ul>
4CHT18	Synthetic Organic Chemistry-II	<ul style="list-style-type: none"> <li>• Get an idea about the disconnection approach of organic molecules to frame a chemical synthesis.</li> </ul>

		<ul style="list-style-type: none"> <li>• Use retrosynthetic method for the logical dissection of complex organic molecules and devise synthetic methods.</li> <li>• Learn different techniques of asymmetric synthesis.</li> <li>• Apply asymmetric transformations in a logical manner for the synthesis of chiral molecule.</li> </ul>
4CHT19	Instrumental methods of analysis	<ul style="list-style-type: none"> <li>• Learn principles and Applications of Electroanalytical methods, Spectrophotometry and Atomic absorption spectroscopy.</li> <li>• Learn principles, applications of Inductively coupled plasma-atomic emission spectroscopy (ICP-AES) and ICP- Mass spectrometry (ICP-MS) in analysis of trace and toxic metals in water.</li> <li>• Learn principles and Applications of Molecular fluorescence spectroscopy</li> <li>• Understand the structural characterization of Inorganic compounds.</li> </ul>
4CHT20	Organometallic Chemistry	<ul style="list-style-type: none"> <li>• Study the preparation, structures and properties of Organometallic compounds of transition metals and lanthanides.</li> <li>• Know the role of Organometallic compounds in organic synthesis.</li> <li>• Understand the principles and applications of Homogenous Catalysis.</li> </ul>
4CHT21	General Organic Chemistry	<ul style="list-style-type: none"> <li>• Learn the methods of synthesis and reactivity Heterocyclics</li> <li>• Describe the mechanisms and synthetic applications of rearrangement reactions.</li> <li>• Demonstrate the Chemistry and synthesis of vitamins and hormones.</li> <li>• Learn the synthesis and pharmacological applications and adverse effects of some important drugs.</li> </ul>
4CHT22B	Medicinal chemistry	<ul style="list-style-type: none"> <li>• Understand the basic concepts in Medicinal Chemistry, and Drug Discovery.</li> <li>• Gain the knowledge of the connection between the structural features of the drugs and their physico-chemical characteristics, mechanism of action and use.</li> <li>• Acquired the knowledge about the therapeutic classes of drugs.</li> </ul>
4CHT23	Catalysis	<ul style="list-style-type: none"> <li>• Learn the principles and applications of Heterogeneous Catalysis.</li> <li>• Understand mechanism of heterogeneous catalysis.</li> <li>• Understand Kinetics and mechanism of Enzyme Catalysis.</li> </ul>

4CHT24A	Nanomaterials, Macromolecules and Data analysis	<ul style="list-style-type: none"> <li>• Understand the synthesis of nanomaterials and their application.</li> <li>• Apply their learned knowledge to develop Nanomaterial's.</li> <li>• To evaluate the analytical data in terms of statistics and estimates kinds of errors in chemical analysis.</li> </ul>
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4CHT24B	Supramolecular, Material Sciences, Lasers and Computational Chemistry	<ul style="list-style-type: none"> <li>• Learn the principles, types of interactions between host and guest molecules.</li> <li>• Study the structures, mechanical properties of ceramics and characterization of nanomaterials using various spectral techniques.</li> <li>• Learn the techniques of single crystal growths</li> <li>• Study characteristics of laser light and application of lasers in chemistry.</li> <li>• Acquire the knowledge in Molecular Modelling.</li> </ul>
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## ECONOMICS

### Course Outcomes (CO)

Course	Paper	Objectives
Course Code	Course title	
	Micro Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand the basic economic problems of consumer behavior, demand forecasting and theories classical and modern economists.</li> <li>2. Students are able to learn various market structures, alternative price theories.</li> <li>3. Students are able to understand concept of factor pricing theories.</li> <li>4. Students are able to learn theories of general equilibrium</li> <li>5. Students are able to learn theories of welfare economics</li> </ol>

Course Code	Course title  Macro Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand the concepts of National Income</li> <li>2. Students are able to understand the different schools of thoughts in economics</li> <li>3. Students are able to understand Demand for Money and the Classical and Keynesian approaches and theories</li> <li>4. Students are able to learn different theories of inflation like classical, Keynesian, monetarists and structuralists</li> <li>5. Students are also able to learn different models of business cycles and macro economic policies.</li> <li>6. Students are able to understand role of RBI, economic stabilization and reforms of financial sector</li> </ol>
Course Code	Course title  Quantitative Methods	<ol style="list-style-type: none"> <li>1. Students are able to understand the statistics to solve the averages in different measures like., Measures of Central tendency and measures of dispersion.</li> <li>2. Students are able to understand the correlation and regression to make use in further research studies.</li> <li>3. Students are able to understand the different types of differentiations and maxima and minima values.</li> </ol>

		<ol style="list-style-type: none"> <li>4. Students are able to understand the probabilities and probability theories.</li> <li>5. Students are able to learn the different tests like Chi-Square, F-test and t-tests for further research studies.</li> <li>6. Students are able to understand time series analysis to make use of forecasting the future estimates.</li> <li>7. Students are able to understand the Index numbers to compare the Base Year and Present Year estimates.</li> </ol>
Course Code	Course title  International Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand theories of international trade.</li> <li>2. Students are able to understand gains from trade and concepts of terms of Trade.</li> <li>3. Students are able to understand tariff issues, quotas and its economic effects.</li> <li>4. Students are able to get knowledge of balance of payment and Marshal -Lerner conditions.</li> <li>5. Students are able to understand foreign exchange determination and Indian foreign exchange reserves</li> </ol>
Course Code	Course title  Indian Economy	<ol style="list-style-type: none"> <li>1. Students are able to understand structure of Indian Economy in Pre-British period</li> <li>2. Students are able to learn six decades of Indian Economy</li> <li>3. Students are able to understand global population scenario and migration</li> <li>4. Students are able to learn various development indices and role of infrastructure in economic development</li> <li>5. Students are able to learn land reforms and technological changes and pricing of agricultural inputs</li> <li>6. Students are able to understand industrial policies and industrialization</li> </ol>
Course Code	Course title	<ol style="list-style-type: none"> <li>1. Students are able to understand various theories of public finance</li> <li>2. Students are able to understand taxation</li> </ol>

	Public Economics	<p>theories, approaches &amp; laffer curve</p> <ol style="list-style-type: none"> <li>Students are able to understand public expenditure, Wagner's Law, Peacock - Wiseman Hypothesis and types of budget</li> <li>Students are able to understand public debt, burden and redemption</li> <li>Students are able to learn central and state financial relations and causes of deficit financing</li> <li>Students are able to understand Indian Public finance, trends in Indian tax revenue</li> </ol>
Course Code	Economics of Growth and Development	<ol style="list-style-type: none"> <li>Students are able to learn growth and development approaches</li> <li>Students are able to understand classical and neo-classical economic development theories</li> <li>Students are able to learn various growth models and theories</li> <li>Students are able to understand various economic issues and</li> <li>Students are able to understand various models of developed and developing countries</li> </ol>
Course Code	Course title  Economics of Environment	<ol style="list-style-type: none"> <li>Students are able to understand concepts of environment, pricing theories of environmental variables</li> <li>Students are able to learn problems of resource allocation, exhaustible and non-exhaustible and implications of ecological imbalances</li> <li>Students are able to understand sustainable growth models of modern and neo-classical</li> <li>Students are able to learn people's movement for sustainable development and its goals</li> <li>Students are able to understand degradation of environment, industrial pollution and control policies</li> </ol>
Course Code	Course title  Economics of Agriculture	<ol style="list-style-type: none"> <li>Students are able to learn the role of agriculture in economic development</li> <li>Students are able to understand land reforms and peasant struggle, agriculture wages</li> </ol>



		<ol style="list-style-type: none"> <li>3. Students are able to learn agricultural production and productivity, green revolution and technology</li> <li>4. Students are able to learn types credit sources, allied activities and marketing</li> </ol>
Course Code	Course title  Financial Institutions and Markets	<ol style="list-style-type: none"> <li>1. Students are able to understand the Indian financial system and functions of financial sector reforms.</li> <li>2. Students are able to understand the Banking system, aims &amp; objectives of developing countries' economies.</li> <li>3. Students are able to understand the money market &amp; capital market structure.</li> <li>4. Students are able to understand the stock-exchange system – SEBI.</li> <li>5. Students are able to understand the foreign exchange markets &amp; Rates – Devaluation and depreciation and international liquidity.</li> <li>6. Students are able to understand the financial system of World Bank, IDA and ADB.</li> </ol>
Course Code	Course title  Economics of Rural Development	<ol style="list-style-type: none"> <li>1. Students are able to understand the Rural Development analysis.</li> <li>2. Students are able to understand the Impact of Green Revolution and Changes in agriculture.</li> <li>3. Students are able to understand the Rural Financial structure and Reforms in Financial sector.</li> <li>4. Students are able to understand the problems of Rural Labour; female and child Labour in rural areas.</li> <li>5. Students are able to understand the cause and remedial measures of poverty and unemployment in rural areas.</li> </ol>
Course Code	Course title  Political Economy	<ol style="list-style-type: none"> <li>1. Students are able to understand value, distribution and development theories.</li> <li>2. Students are able to understand Pre-Marxian critiques of Capitalism, Labor theory of Value &amp; Surplus Value, Dialectical Historical Materialism, traditional Marxist and neo-marxist approaches</li> <li>3. Students are able to understand feudalism as mode of production, capitalism, industrial revolution</li> </ol>

		4. Students are able to understand theories of imperialism and Dependency paradigm, role of MNCs and Globalisation
Course Code	Course title  Industrial Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand the Importance of Loud Location to start the Industries.</li> <li>2. Students are able to understand the Industrial policies and promoting the Industries in India.</li> <li>3. Students are able to understand the Importance of production and productivity trends in India.</li> <li>4. Students are able to understand the Importance of Foreign Capital and Problems of Financial Institutions.</li> <li>5. Students are able to understand the problems and Remedial measures of Large and Small Scale industries in India.</li> </ol>
Course Code	Course title  Econometric Methods	<ol style="list-style-type: none"> <li>1. Students are able to understand the different methods of Econometric models, like classical and linear regression models.</li> <li>2. Students are able to understand the estimation through OLS models</li> <li>3. Students are able to understand the concept of R-values and Adjusted R-Values</li> <li>4. Students are able to understand the Dummy variables how to make use of Dummy variable in variable analysis</li> </ol>
Course Code	Course title  Economics of Tribal Studies	<ol style="list-style-type: none"> <li>1. Students are able to learn various concepts of tribes and characteristics of tribal economy.</li> <li>2. Students are able to understand historical review of various tribal movements and telangana armed struggle</li> <li>3. Students are able to learn colonialism, peasantisation and proletarianisation of tribal groups</li> <li>4. Students are able to learn integration of tribes, impact of globalization, cultural disintegration from bride price to dowry price and various approaches for tribal development</li> </ol>
Course Code	Course title  Economics of Women's Studies	<ol style="list-style-type: none"> <li>1. Students are able to understand concept of Women's Studies.</li> <li>2. Students are able to understand origin and development of feminism.</li> <li>3. Students are able to understand status of women in Indian society, pre and post independence period.</li> </ol>

		<ol style="list-style-type: none"> <li>4. Students are to understand demography of female population.</li> <li>5. Students are able to understand analysis of women's work paid and unpaid</li> </ol>
Course Code	Course title  Labour Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand basic concepts of labour force.</li> <li>2. Students are able to learn employment and unemployment strategies under five year plans</li> <li>3. Students are able to understand the theories of labour wages and legislations</li> <li>4. Students are able to understand the labour unions and industrial disputes</li> </ol>
Course Code	Course title  Human Resource Management	<ol style="list-style-type: none"> <li>1. Students are able to understand significance of HRM, responsibilities of manager and problems</li> <li>2. Students are able to learn various plannings job description and evaluation</li> <li>3. Students are able to learn HR development strategies, HRD orientation &amp; training</li> <li>4. Students are able to learn Industrial relations and to resolve conflicts</li> <li>5. Students are able to learn international strategies and approaches of HR, globalization impact and future of HRM</li> </ol>
Course Code	Course title  Managerial Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand the Managerial economic skills and objectives Firm.</li> <li>2. Students are able to understand the Consumer behavior and Demand analysis.</li> <li>3. Students are able to understand the Risk and uncertainty and the problems of insurance.</li> <li>4. Students are able to understand the production costs and Law of returns of Scale.</li> <li>5. Students are able to understand the different markets analysis and pricing strategies.</li> </ol>
Course Code	Course title  Computer Applications in Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand the computer fundamentals components and how to make use in Economics.</li> <li>2. Students are able to understand the MS-office for using in Economics.</li> <li>3. Students are able to understand the SPSS for their further research and different types of data analysis in Economics.</li> </ol>

		<ol style="list-style-type: none"> <li>4. Students are able to understand the E-commerce communications – its applications, benefits and web commerce applications in Economics.</li> <li>5. Students are able to understand how to make online shopping in the present market system.</li> </ol>
Course Code	Course title  Regional Economics	<ol style="list-style-type: none"> <li>1. Students are able to understand concept of regional planning, types of regions and functional approaches</li> <li>2. Students are able to understand theories of regional imbalances and inter-regional differentials of development</li> <li>3. Students are able to understand Regional policy, pre and post-independence period and causes for regional imbalances</li> </ol>
Course Code	Course title  Demography	<ol style="list-style-type: none"> <li>1. Students are able to understand concept of Demography, theories of population and development</li> <li>2. Students are able to understand population trends, population explosion, growth and sex structure</li> <li>3. Students are able to understand trends in fertility, trends, factor affecting fertility, marital status, mean age at marriage and mortality.</li> <li>4. Students are able to understand migration, urbanization, population policy and family planning strategies</li> </ol>
Course Code	Course title  Economics of Infrastructure	<ol style="list-style-type: none"> <li>1. Students are able to understand the Importance of Infrastructure in Economic Development.</li> <li>2. Students are able to understand the objectives and characters of public utilities.</li> <li>3. Students are able to understand the structure of Transport Costs and Location.</li> <li>4. Students are able to understand the Communication system utilities.</li> <li>5. Students are able to understand the problems and Remedial measurements of electricity, Gas and water Supply.</li> </ol>

## PHYSICS

Course Outcomes		
Semester-I		
Course code	Course title	Course outcomes
101	Mathematical Physics	<ol style="list-style-type: none"><li>1. Students are able to understand the different ways of solving first and second order differential equations.</li><li>2. Students are able to understand and solve the problems based on special functions like Hermite, Bessel, Laguerre and Legendre functions.</li><li>3. Students are able to understand fundamentals and applications of Fourier series, Fourier and Laplace transforms, their inverse transforms etc.</li><li>4. Students are able to apply statistical numerical methods for performing statistical analysis.</li></ol>
102	Classical Mechanics	<ol style="list-style-type: none"><li>1. Students are able to understand and solve the problems related to Kepler's laws.</li><li>2. Students are able to understand variation principle and Hamiltonian formulation.</li><li>3. Students are able to understand and solve central force problems and understands the conservation of energy, linear momentum and angular momentum in system</li><li>4. Students are able to understand how to impose constraints on a system in order to simplify the methods used in solving physics problems.</li><li>5. Students are able to understand the concept of Poisson Brackets and canonical transformations and are able to solve problems on Poisson brackets and canonical transformations.</li><li>6. Students are able to understand the concept of special theory of relativity.</li></ol>

103	Solid State Physics	<ol style="list-style-type: none"> <li>1. Students are able to understand electron and neutron diffraction methods.</li> <li>2. Students are able to understand types of crystal defects.</li> <li>3. Students are able to understand theory of diamagnetism.</li> <li>4. Students are able to understand fundamental dielectric and magnetic properties of the material.</li> <li>5. Students are able to understand and calculate crystal structure and F.C.C. &amp; B.C.C</li> <li>6. Students are able to understand concept of interference from Fabry-Parrot etal. on experiment.</li> <li>7. Students are able to understand Hall Effect and solve problems related to it.</li> <li>8. Students are able to understand and design experimental setup of heat capacity of material.</li> </ol>
104	Analog and Digital Electronics	<ol style="list-style-type: none"> <li>1. Know the characteristics of various components.</li> <li>2. Understand the utilization of components.</li> <li>3. Design and analyze small signal amplifier circuits.</li> <li>4. Learn Postulates of Boolean algebra and to minimize combinational functions.</li> <li>5. Design and analyze combinational and sequential circuits. And to Know about the logic families and realization of logic gates.</li> </ol>
<b>Semester-I –Labs:</b>		
105	General Physics -I	<ol style="list-style-type: none"> <li>1. Know the characteristics of Laser.</li> <li>2. student is able to understand the calculation of thermal expansion co-efficient of different metals.</li> <li>3. Using single slit finding of Sodium wave length.</li> <li>4. know the calculation of Rydberg constant using Halogen lamp source. finding the values of Ultrasonic Velocity of some</li> <li>5. Execute the MATLAB programs using MATLAB software.</li> </ol>
106	Electronics -I	<ol style="list-style-type: none"> <li>1. Students are able to understand and design circuits of astable and monostable multivibrators.</li> <li>2. Students are able to understand concept of thermal and electrical conductivity of copper.</li> <li>3. Students are able to understand fundamental of Mathematics and are able to solve various problem using it.</li> <li>4. Students are able to understand basics phenomenon of amplifier.</li> </ol>

Semester -II		
201	Statistical Mechanics	<ol style="list-style-type: none"> <li>1. Micro and macroscopic systems and phase space concept.</li> <li>2. Understanding of different types of ensembles.</li> <li>3. F.D, B.E and M.B particle distribution and statistical weight.</li> <li>4. Partition functions and Sacker tetrode equation.</li> <li>5. Ideal F.D, B.E AND 1-D &amp; 2-D ising models etc. some statistical mechanics applications.</li> </ol>
202	Quantum Mechanics I	<ol style="list-style-type: none"> <li>1. Students are able to understand and calculate matrix Algebra and Eigen value problems.</li> <li>2. Students are able to understand complex variables like complex numbers, complex algebra etc.</li> <li>3. Students are able to understand calculus of Residues- Residues theorem.</li> <li>4. Students are able to apply Fourier series analysis to solve numerical methods.</li> <li>5. Students are able to understand fundamental concept and formalism of quantum mechanics.</li> <li>6. Students are able to understand and solve the problems related to one-dimensional problems and Schrödinger equation for NET-SET exam.</li> <li>7. Students are able to understand and able to calculate Eigen values and Eigen vectors of angular momentum.</li> <li>8. Students are able to analyses Ket and Bra spaces and inner products.</li> </ol>
203	Integrated circuits & Analog modulation	<ol style="list-style-type: none"> <li>1. Analyze the types of integrated circuits.</li> <li>2. To study and design various linear applications of OP Amps.</li> <li>3. Analyse feedback and its effect on the performance of Op Amp.</li> <li>4. Understand the terminal characteristics of Op Amps and to design circuits for particular applications.</li> <li>5. Use of different modulation and demodulation techniques used in analog communication.</li> <li>6. Analyse transmitter and receiver circuits. Advantages, disadvantages and limitations of analog communication systems.</li> </ol>
204	MATLAB and Applications	<ol style="list-style-type: none"> <li>1. Students are able to understand MATLAB software.</li> <li>2. Students are able to understand Symbolic Manipulations</li> <li>3. Students are able to understand and apply Mathematica functions.</li> <li>4. Students are able to analysis MATLAB plots</li> </ol>

		<p>and design the electronic figures.</p> <ol style="list-style-type: none"> <li>Students are able to understand Numerical Methods.</li> <li>Students are able to understand Numerical approximation methods.</li> <li>Students are able to understand Numerical differentiation and integration.</li> <li>Students are able to understand Graphics and Curve fitting using MATLAB.</li> </ol>
<b>Semester II Labs</b>		
205	General Physics -II	<ol style="list-style-type: none"> <li>The students gain knowledge in some apparatus and can undertake the measurements of Ultrasonicinterferometer, newton rings, elastic constants of glass, etc.</li> <li>The students develop skill in assembling various kinds of apparatus, data taking manually and skill developed to analyse data and optimize errors in a measurement.</li> <li>The students are competent enough to do practical.</li> </ol>
206	Electronics -II	<ol style="list-style-type: none"> <li>Design oscillators and amplifiers using Op Amps.</li> <li>Design filters using Op Amp and perform experiment on frequency response.</li> <li>Analyse the performance of oscillators and multivibrators using SPICE.</li> </ol>



**Semester -III**

301	Quantum Mechanics - II	<ol style="list-style-type: none"><li>1. Students are able to understand different types of operators used in quantum mechanics and are able to use them to solve different problems.</li><li>2. Students are able to understand and solve problems related to different types of potential like, Square-well, Bloch wave, Kroning-Penney square periodic potential.</li><li>3. Students are able to understand and solve hydrogen atom problem</li><li>4. Students are able to understand the angular momentum operators &amp; their Eigen values</li><li>5. Students are able to understand time independent perturbations theory.</li><li>6. Students are able to understand and calculate Time- dependent potentials and are also able to understand time-dependent potentials</li><li>7. Students are able to understand scattering theory.</li><li>8. Students are able to understand Spin Angular Momentum and theory of wave function.</li><li>9. Students are able to understand and think the concept of radiation and selection rule</li></ol>
302	Nuclear Physics	<ol style="list-style-type: none"><li>1. The students gather advanced knowledge in Nuclear physics. The different nuclear interactions and the corresponding nuclear potentials and its dependence on the couplings are learned. The knowledge helps to choose for an Advance course in Nuclear Physics.</li><li>2. The skill gained by this course gives an understanding of nucleus at low energy.</li><li>3. Students are able to analyze the single particle nuclear shell model and related phenomena.</li><li>4. Students are able to understand and apply selection rule of elementary particles and fission, fusion reactions.</li><li>5. The students develop basics to solve some of the problems of nuclear</li></ol>
303A	Solid State Physics -I	<ol style="list-style-type: none"><li>1. Students are able to understand different crystal structures, interaction with X-ray and also understands various properties about crystals.</li><li>2. Students are able to understand different types of crystal defects.</li><li>3. Students are able to understand different properties of semiconducting and superconducting properties.</li><li>4. Students are able to understand theoretical background of dielectric and magnetic properties of material.</li></ol>

303B	Electronics –I ( Microprocessors)	<ol style="list-style-type: none"> <li>1. Demonstrate the various features of microprocessor, memory and I/O devices including concepts of system bus.</li> <li>2. Identify the hardware elements of 8085 microprocessor including architecture and pin functions and programming model including registers, instruction set and addressing modes.</li> <li>3. Select appropriate 8085 instructions based on size and functions to write a given assembly language program.</li> <li>4. Design a given interfacing system using concepts of memory and I/O interfacing.</li> <li>5. Demonstrate the features of the advance microprocessors.</li> </ol>
303C	Material Science -I	<ol style="list-style-type: none"> <li>1. Students will learn different types of materials and their properties.</li> <li>2. To understand the deformation in solids.</li> <li>3. To gain the knowledge of Diffusion Laws.</li> <li>4. Students also study and gain the knowledge of Dielectric materials and their applications.</li> <li>5. Students also learn about ferroelectrics and Liquid crystals and application of Liquid crystals.</li> </ol>
304A	Solid State Physics -II	<ol style="list-style-type: none"> <li>1. Students are able to understand for Powder Crystal Structure.</li> <li>2. Students are able to understand different types of the experiments. (Debye-Scherrer) etc.</li> <li>3. Students are able to understand Fourier Analysis of Electron density and Limitations of X-Ray diffractions.</li> <li>4. Students are able to understand High Frequency Dielectric Constants and Dielectric Dispersion.</li> <li>5. Students are able to understand Dipole Theory of Ferro Electrics and Ferro Electric Catastrophe.</li> </ol>
304B	Electronics ( Special –II) Comm.systems	<ol style="list-style-type: none"> <li>1. To acquire a fundamental understanding of communication system and modulation.</li> <li>2. Students will able to understand the effect of noise and performance of noise in AM modulation.</li> <li>3. Students will learn concept of transmitter and various types of receivers and detection techniques.</li> <li>4. To analyze the various filters and receivers. 2. To understand the basic types of modulation</li> <li>5. To acquire knowledge on transmission line equations with various type of constants.</li> <li>6. To gain better understanding on transmission line at radio frequencies. To frame details on signal propagation through rectangular and circular waveguides.</li> </ol>

304C	Nanoscience: Special –II	<ol style="list-style-type: none"> <li>1. Students are able to understand band structure and various conduction mechanisms at nanoscale.</li> <li>2. Students are able to understand quantum behaviour of nanometric world.</li> <li>3. Students are able to understand various synthesis methods like physical, chemical and biological for nanomaterials and their differences.</li> <li>4. Students are able to understand lithography techniques for synthesis of nanomaterials.</li> </ol>
<b>Semester III Labs</b>		
305	General Physics –II	<ol style="list-style-type: none"> <li>1. To gain knowledge on ESR spectrometer and finding of 'g' factor.</li> <li>2. Students can do the Fourier analysis (Squarewave, clipped sine wave, saw tooth wave).</li> <li>3. Students are able to do the helical method and for finding e/m of an electron.</li> <li>4. Students also get the hands-on experience of four probe method.</li> <li>5. To study operating voltage and characteristics of G.M counter and also study the characteristics of photo conductive cell.</li> </ol>
306A	Solid State Physics-I	<ol style="list-style-type: none"> <li>1. Students are able to understand all the thin film deposition techniques.</li> <li>2. Students are able to understand different synthesis techniques of thin films.</li> <li>3. Students are able to study the physical properties of thin films using XRD, FTIR and analyses them.</li> <li>4. 4 Students are able to study the structural properties of thin film by SEM, FESEM and analyses them.</li> </ol>
306B	Electronics –I (Special)	<ol style="list-style-type: none"> <li>1. Select appropriate 8085 instructions based on size and functions to write a given assembly language programs like Addition, subtraction, division and multiplication. Etc.</li> <li>2. Write an ALP to interface different peripherals like DAC, ADC, Stepper motor and LED.</li> <li>3. Perform different modulation and demodulation techniques.</li> <li>4. Design of active filters like low pass, High pass, Band pass etc.</li> </ol>

306C	Nanoscience-I(Special)	<ol style="list-style-type: none"> <li>1. Students are able to understand and able to do the synthesis of metallic nanoparticles like silver and study the structural and optical behaviour using XRD and spectrophotometer.</li> <li>2. Students are able to do the synthesis of nanomaterials using sol-gel method.</li> <li>3. Students are able to understand the concept of thermal decomposition of materials and able to synthesize the nanoparticles by using thermal decomposition process.</li> <li>4. Students are able to calculate the particle size and optical absorption of the synthesized nanomaterials using characterization techniques like XRD, UV-vis spectroscopy.</li> </ol>
<b>Semester -IV</b>		
401	Electromagnetic Theory and Optics	<ol style="list-style-type: none"> <li>1. Students are able to understand Maxwell's Equations and E.M. wave equations in waveguide of the arbitrary cross section.</li> <li>2. Students are able to calculate TE and TM modes of waveguide.</li> <li>3. Students are able to understand and apply scalar and vector potentials, retarded potentials, Lienard-Wiechert potentials.</li> <li>4. Students are able to understand radiation from accelerated charges and different radiation reaction.</li> <li>5. Students are able to understand the different aspects of the special theory of relativity in electrodynamics.</li> </ol>
402	Molecular Resonance and Spectroscopy	<ol style="list-style-type: none"> <li>1. Students are able to understand and apply LL coupling, SS-coupling, LS coupling in atomic spectra and able to calculate and their selection rules.</li> <li>2. Students are able to understand Zeeman effect and Paschen-Back of two electrons, Stark effect of hydrogen and Compton effect.</li> <li>3. Students are able to understand techniques and instrumentation of infra-red spectroscopy.</li> <li>4. Students are able to understand and apply Frank-Condon principle, Born-Oppenheimer approximation</li> </ol>
403A	Solid State Physics -III	<ol style="list-style-type: none"> <li>1. To learn about the Magnetism in that they go through Heisenberg model, Dispersion relation for magnons in a ferromagnet, Susceptibility and Hubbard model and energy bands.</li> <li>2. Students can acquire knowledge of Superconductivity -I and Superconductivity -II.</li> </ol>

403B	Electronics-III ( Microcontrolle rs)	<ol style="list-style-type: none"> <li>1. Demonstrate the various features of microcontroller 8051.</li> <li>2. Identify the hardware elements of 8051 microcontroller including architecture and pin functions and programming model including registers, instruction set and addressing modes.</li> <li>3. Select appropriate 8051 instructions based on size and functions to write a given assembly language program.</li> <li>4. Design a given interfacing system using concepts of memory and I/O interfacing, LCD interfacing, LED interfacing, ADC and DAC interfacing with 8051.</li> <li>5. Demonstrate the features of other Microcontrollers E.g.: ATMEL, PIC microcontrollers</li> </ol>
403C	Material Science -II	<ol style="list-style-type: none"> <li>1. Understanding Luminescence spectra (emission and absorption).</li> <li>2. Students will get the knowledge of Radiative and nonradiative processes.</li> <li>3. About the Different kinds of Luminescence</li> <li>4. Students able to understand the different kinds of colour centres in alkali halides.</li> <li>5. Ceramic materials and their Phase diagram rules for binary oxide systems students can gain knowledge.</li> <li>6. Students are able to gain the knowledge of Composite and polymer materials.</li> </ol>
404A	Solid State Physics -IV	<ol style="list-style-type: none"> <li>1. Students can learn the preparation and characterization techniques of thin film.</li> <li>2. Students are able to gain the knowledge of Nano-structured materials – preparation and characterization.</li> <li>3. Students get the knowledge of polymers and Ceramic materials.</li> </ol>

404B	Electronics –IV Optical, Satellite and Mobile Comm.System	<ol style="list-style-type: none"> <li>1. To learn about the historical development, advantages, disadvantages and applications of optical fiber communication.</li> <li>2. To learn the basic elements of optical fiber transmission link, fiber modes, configurations and structures.</li> <li>3. To understand the different kind of losses, signal distortion.</li> <li>4. Gather fundamental knowledge about optical fiber communication system and its application.</li> <li>5. Describe the satellite orbits and its trajectories with the definitions of parameters associated with it.</li> <li>6. Analyze the satellite orbits.</li> <li>7. Analyze the earth segment and space segment.</li> <li>8. Describe the subs systems of satellite and earth station.</li> <li>9. Describe the satellites used for applications in remote sensing, weather forecasting and navigation.</li> <li>10. Understand the cellular mobile system design and concepts.</li> <li>11. Interpret the Co-channel interferences and their parameters.</li> <li>12. Illustrate the importance of Handoff for preventing loss of interruption of services to a caller.</li> <li>13. Interpret the channel sharing and cell splitting to reduce the call dropping or blocking rates in a mobile cellular network. Extend the concepts of channel assignment, dropped call rate to improve cell coverage for better network services.</li> </ol>
404C	Nanoscience Special -IV	<ol style="list-style-type: none"> <li>1. Students are able to understand and study the various characterization techniques (Electron microscopes) like SEM, TEM, STM, AFM and SNOM for synthesized nanomaterials and the differences and advantages of these microscopes.</li> <li>2. Students are able to how calculate crystallite size using XRD techniques.</li> <li>3. Students are able to understand mechanical, structural, thermal, electrical, optical and magnetic properties nanomaterials.</li> <li>4. Students are able to understand the synthesis and physicochemical properties of carbon based nanomaterials like CNT's, Fullerene materials and B-N tubes and single electron transistors.</li> <li>5. Students are able to understand the synthesis and properties of advanced nanomaterials like aerogels, zeolites and porous silicon materials and their applications</li> </ol>

Semester –IV Labs		
405	General Physics-II	<ol style="list-style-type: none"> <li>1. Students can the analysis of an audio amplifier using optical fiber, Numerical aperture of an optical fiber, characteristics of a Laser Diode.</li> <li>2. Students are able to do calculation of susceptibility of a salt.</li> <li>3. Using G.M Counter students can find the Gamma-attenuation coefficients for lead, copper and aluminium.</li> </ol>
406A	Solid State Physics(Special)	<ol style="list-style-type: none"> <li>1. Students are able to do synthesis different metal oxides using different techniques.</li> <li>2. Students are able to do characterization of thin films.</li> <li>3. Students are able to analysis results of thin films.</li> <li>4. Students are expertise in the preparation and characterization of thin film. Student will be able to create, apply, and disseminate the basic properties of semiconductors materials and Physics behind them through solving problems.</li> <li>5. Student will be able to create the ability to identify, formulate, analyze and solve problems in semiconductors physics.</li> <li>6. Student will be able to create the quantitative and qualitative understanding of semiconductors.</li> <li>7. Student will be able to apply quantitative and qualitative studies for designing the electronic devices under various fields</li> </ol>
406B	Electronics(Special)	<ol style="list-style-type: none"> <li>1. Select an appropriate 8051 instructions based on size and functions to write a given assembly language programs for arithmetic Operations, Logical operations ....</li> <li>2. Design a given interfacing system using concepts of memory and I/O interfacing, LCD interfacing, LED interfacing, ADC and DAC interfacing with 8051.</li> <li>3. Perform different modulation and demodulation techniques.</li> </ol>

406C	Nanoscience (Special)	<ol style="list-style-type: none"> <li>1. Students are able to synthesize ZnO nanoparticles and analyse their structure and optical behaviour at RT.</li> <li>2. Students are able to study the dielectric behaviour of glass, wood, BaTiO<sub>3</sub> materials with frequency variation and get the concept how the dielectric constant of these different materials changes.</li> <li>3. Students are able to synthesize nanoparticles using high energy ball-milling and able to analyse the results.</li> <li>4. Students are able to understand the various characterization techniques like XRD, UV- vis spectroscopy to know the structural and optical behaviour of nanomaterials</li> <li>5. Student will be able to create the ability to identify, formulate, analyse and solve problems in semiconductors physics.</li> </ol>
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## **ZOOLOGY**

### **Course Outcomes**

Sl.No	Course Name	Course Outcomes
1	Biosystematics, Structure & Function Of Invertebrates	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon the structure and organization of invertebrate animals.</li> <li>➤ Explain modifications in various functions of animals during transition from invertebrates to vertebrates.</li> <li>➤ Discuss the evolutionary significance of larval forms of invertebrates.</li> <li>➤ Identify invertebrates and homology, analogy and modifications of mouthparts in relation to feeding habits.</li> </ul>



2	Tools and Techniques in Biology	<ul style="list-style-type: none"> <li>➤ Learn the biophysical properties and functioning of life processes.</li> <li>➤ Both these theory and practical papers touch upon Acquire skills in tools and techniques available for studying biochemical and biophysical nature of life.</li> <li>➤ Equip the learner to use the tools and techniques for project work/ research in biology.</li> <li>➤ Get skills in Histological &amp; biochemical techniques.</li> <li>➤ Learn the application of radiations in Medical treatments.</li> </ul>
3	Animal Physiology and Ethology	<ul style="list-style-type: none"> <li>➤ The students would have learned the structures and functions of various organs and their organized systems to help a living organism thrive in its environment.</li> <li>➤ Understand all physiological processes of vertebrates &amp; analyse the biochemically.</li> <li>➤ Correlate the comparative physiology of the systems and understand their regulation &amp; control.</li> <li>➤ Both these theory and practical papers touch upon Compare the structure,</li> </ul>

		functions and regulation of the receptor organs of vertebrates.
4	Genetics and Evolution	<ul style="list-style-type: none"> <li>➤ Get an in-depth understanding on the principles and mechanisms of inheritance</li> <li>➤ Understand the fine structure and molecular aspects of genetic material.</li> <li>➤ Learn the importance of inheritance in Man.</li> <li>➤ Understand the process of Sex determination and details of Human chromosomes &amp; Human chromosome project.</li> <li>➤ Understand the gradual development and evolutionary history of different kinds of living organisms from earlier forms over several generations.</li> </ul>
5	Structure and Function of Vertebrates	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon the understand all physiological processes of vertebrates &amp; analyse them biochemically.</li> <li>➤ Correlate the comparative physiology of the systems and understand their regulation &amp; control.</li> <li>➤ Knowledge of Evolution of heart , lungs and urino-genital organs of vertebrates</li> <li>➤ Knowledge of comparative anatomy of all systems of vertebrates.</li> </ul>
6	Environmental Biology	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon the understand the basic theories and principles of ecology and environment.</li> <li>➤ Get acquainted with various disciplines in ecology.</li> <li>➤ Learn current environmental issues based on ecological principles.</li> <li>➤ Gain critical understanding of human influence on environment.</li> <li>➤ Acquire skills to solve environmental issues.</li> <li>➤ Understand the environmental laws and try to apply them in current issues.</li> </ul>

7	Biochemistry	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch deeper upon the chemical nature of life and life process.</li> <li>➤ Develop an idea on structure and functioning of biologically important molecules.</li> <li>➤ Generate an interest in the subject and help students explore the new developments in Biochemistry.</li> <li>➤ Create curiosity in antioxidants and their role in cure of diseases.</li> <li>➤ Inculcate an interest for further research.</li> </ul>
8	Biostatistics and Computer Applications	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon impart concepts, generate enthusiasm and make awareness about the tools/gadgets and accessories of biological research.</li> <li>➤ Equip the learner to carry out original research in biology.</li> <li>➤ Inculcate analytical and critical thinking skills through problem solving</li> <li>➤ Acquire hands on training in the use of various tools and techniques suggested in the course.</li> <li>➤ Develop skills to solve scientific problems with statistical formulas</li> </ul>
9	Molecular Biology	<ul style="list-style-type: none"> <li>➤ To explain Biomaterial, Nanoparticles and their importance.</li> <li>➤ Both these theory and practical papers touch upon to understand biological reactions, structure of protein, carbohydrates fats, nucleic acids and their metabolism.</li> <li>➤ To develop a knowledge of enzymes and mechanism of their action in various biological reactions.</li> <li>➤ To understand the process of gene expression &amp; protein synthesis.</li> <li>➤ To introduce the new developments in molecular biology and its implications in human welfare</li> </ul>

10	Immunology	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon an intensive and in-depth knowledge to the students in immunology.</li> <li>➤ Outline the key components of the innate and adaptive immune responses</li> <li>➤ Understand the role of immunology in human health and well-being.</li> <li>➤ Familiarize the students the new developments in immunology.</li> <li>➤ Learn the way body fights foreign bodies.</li> <li>➤ Understand the risks in transplantation of organs.</li> </ul>
11	Parasitology	<ul style="list-style-type: none"> <li>➤ To help students gain a fundamental understanding and basic level of familiarity with the diversity of animal parasites, interactions with hosts, life history, physiology, and evolution.</li> <li>➤ To assist students with incorporating knowledge of parasites into other branches of biology including community ecology, behavioral ecology, and conservation.</li> <li>➤ To help students distinguish between parasites and disease and recognize the conditions that result in disease as well as appropriate and efficient preventative measures and management responses.</li> <li>➤ To provide students realistic preparation for field and laboratory disease investigations through hands-on experiences</li> </ul>
12	Endocrinology & Reproductive Physiology	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon the understood how fertilization, cleavage and gastrulating occur.</li> <li>➤ Understood the basic concepts of organogenesis.</li> <li>➤ Understood about the basic concepts of growth, regeneration and ageing.</li> <li>➤ Described the test tube baby and placentation in mammals.</li> </ul>

		<ul style="list-style-type: none"> <li>➤ Compare the structure, functions and regulation of the receptor organs of vertebrates.</li> <li>➤ Understand the structure, function and regulation of endocrine &amp; neuroendocrine glands</li> </ul>
13	Cell Biology	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon structural and functional details of the basic unit of life at the molecular Level.</li> <li>➤ Explain Biomembranes and the processes of Cell-cell signalling and cell-cell adhesion.</li> <li>➤ Motivate the learner to refresh and delve into the basics of cell biology.</li> <li>➤ Provide a thorough knowledge on types and properties of Cancer and how normal cells become cancerous.</li> </ul>
14	Developmental Biology	<ul style="list-style-type: none"> <li>➤ Learn the concepts and process in developmental biology.</li> <li>➤ Understand and appreciate the genetic mechanisms and the unfolding of the same during development.</li> <li>➤ Create awareness on new developments in embryology and its relevance to Man</li> <li>➤ Acquire knowledge on teratogenesis and generate awareness in society.</li> <li>➤ Understand the causes of infertility and can take preventive measures.</li> <li>➤ Understand the process of differentiation of eggs and sperms before fertilization.</li> </ul>
15	Fisheries And Aquaculture	<ul style="list-style-type: none"> <li>➤ Both these theory and practical papers touch upon the general classification of fishes, economically important marine and freshwater fishes, migration and fishery products.</li> <li>➤ Described recent concepts in fisheries management, endangered species management.</li> <li>➤ Came to know the various aquaculture systems.</li> </ul>

		<ul style="list-style-type: none"> <li>➤ Understood the type of hatchery, brood stock, larval production, feed management water quality and disease management in cultivable species, live feed production.</li> <li>➤ Described the feed and disease management.</li> </ul>
16	Animal Biotechnology	<ul style="list-style-type: none"> <li>➤ Give students an intensive and in-depth learning in the field of biotechnology.</li> <li>➤ Understand the modern biotechnology practices and approaches with an emphasis in technology application, medical, industrial, environmental and agricultural areas.</li> <li>➤ Learn the students with public policy, biosafety, and intellectual property. rights issues related to biotechnology.</li> <li>➤ Both these theory and practical papers Came to know the concept of PCR, Screening of recombinant clones - nucleic acid hybridization, DNA sequencing, DNA fingerprinting.</li> </ul>









