

*G.S. Mandal's*  
**Marathwada Institute of Technology, CIDCO**  
**Aurangabad**

**Course Outcomes (COs)**

**Program Outcomes (POs)**  
**and**  
**Program Specific Outcomes (PSOs)**

**2020-2021**

## Course Outcomes (COs)

Sr. No.	Name of Programme	Name of Course	Course Outcomes
1	BCA I sem	Accountancy I	The student will be able to: 1. Understand and apply the essential numerical skills required for bookkeeping and accounting. 2. Understand and explain the relationship between the accounting equation and double-entry bookkeeping. 3. Record transactions in the appropriate ledger accounts using the double-entry bookkeeping system 4. Solve the problems on final Account
2	BCA I sem	Industrial Economics	The student will be able to: 1. Learn economics in terms of business. 2. Understand Law of returns. 3. Describe the nature of economics in dealing with the issue of scarcity. 4. Perform supply and demand analysis to analyze the impact of economic events on Markets. 5. Analyze the behaviour of consumers in terms of the demand for products. 6. Evaluate the factors affecting firm behaviour, such as production and costs
3	BCA I sem	Communication Skills	1. Students will be able to improve their communication Skills. 2. Students will be able to improve their reading comprehension. 3. Students will be able to participate in group discussion. 4. Students will be able to know the interview techniques.

4	BCA I sem	Business Statistics	<ol style="list-style-type: none"> <li>1. Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data.</li> <li>2. Calculate measures of central tendency, dispersion and asymmetry, correlation and regression analysis.</li> <li>3. Choose a statistical method for solving practical problems</li> <li>4. Highlight statistical relationships between variables in data sets</li> <li>5. Predict values of strategic variables using regression and correlation analysis.</li> </ol>
5	BCA I sem	Operating System	<ol style="list-style-type: none"> <li>1. Identify basic concepts, features and components of the operating <b>system</b>.</li> <li>2. Understand and learn DOS commands</li> <li>3. Correlate basic concepts of operating system with an existing operating system.</li> </ol>
6	BCA I sem	Office Automation Tool	<ol style="list-style-type: none"> <li>1. To provide in-depth training in the use of office automation, internet and internet tools.</li> <li>2. The course also helps the candidates to get acquainted with IT.</li> <li>3. After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with the internet.</li> </ol>
7	BCA II sem.	Accountancy II	<p>Student will be able to:</p> <ol style="list-style-type: none"> <li>1. Distinguish between Single Entry and Double Entry</li> <li>2. Know the ascertainment of profit under the Single Entry system.</li> <li>3. Understand the meaning and features of Non-Profit Organisations.</li> <li>4. Learn to prepare Receipts &amp; Payment Account, Income &amp; Expenditure Account and Balance Sheet for Non-Profit Organizations.</li> <li>5. Calculate the Goodwill.</li> </ol>
8	BCA II sem.	Industrial Organisation	<ol style="list-style-type: none"> <li>1. Student will able to understand Industrialization and problem of industrialisation</li> <li>2. Student will able to know the scale of operation and size of business</li> <li>3. Student will able to understand the concept of concentration</li> </ol>
9	BCA II sem.	Mathematics	<ol style="list-style-type: none"> <li>1. Find the inverse of a square matrix</li> </ol>

			<ol style="list-style-type: none"> <li>2. Determine if a given matrix is diagonalizable</li> <li>3. Explain the concept of Logarithm and permutation and combination.</li> </ol>
10	BCA II sem.	Programming in C	<ol style="list-style-type: none"> <li>1. Understanding a functional hierarchical code organization. Ability to define and manage data structures based on problem subject domain. .</li> <li>2. Ability to handle possible errors during program execution</li> </ol>
11	BCA II sem.	Principles of Management	<ol style="list-style-type: none"> <li>1. Upon completion of the course, students will be able to have a clear understanding of managerial functions like planning, and have the same basic knowledge on international aspects of management.</li> <li>2. Students will be able to understand the planning process in the organization.</li> <li>3. Students will be able to understand the concept of organization.</li> <li>4. Students will be able to demonstrate the ability to direct ,leadership and communicate effectively.</li> <li>5. Students will be able to analysis isolate issues and formulate best control methods.</li> </ol>
12	BCA II sem.	UNIX operating System	<p>On completion of this course the student should be able to:</p> <ol style="list-style-type: none"> <li>1. Identify and use UNIX/Linux utilities to create and manage simple file processing operations, organize directory structures with appropriate security, and develop shell scripts to perform more complex tasks.</li> </ol>
13	BCA III sem.	Principle of Management	<ol style="list-style-type: none"> <li>1. Recognize the role of a manager and how it relates to the organization's mission.</li> <li>2. Define management, its four basic functions and skills.</li> <li>3. Know critical management theories and philosophies and how to apply them.</li> <li>4. Recognize the concept of social responsiveness and its benefits.</li> <li>5. Explain the relationship between strategic, tactical, and operational plans.</li> <li>6. Identify the stages of team development and the skills a team must acquire to become effective.</li> <li>7. Recognize the part communication plays in the management function.</li> <li>8. Define change management and explain where it fits in the management function.</li> <li>9. Explain the concept of continuous change and its</li> </ol>

			impact on change management.
14	BCA III sem.	OOPS Using C++	On completion of this <b>course</b> the student should be able to: Program using objects and data abstraction, <b>class</b> , and methods in function abstraction. Analyze, write, debug, and test basic C++ codes using the approaches introduced in the <b>course</b> . Analyze problems and implement simple C++ applications using an object-oriented approach.
15	BCA III sem.	Business Law - I	Upon completing the requirements for this course, the student will be able to: 1. Identify the elements of a contract. 2. Describe the Sell of goods Act. 3. Identify laws, conditions and regulations in national and international work environments.
16	BCA III sem.	DBMS	On completion of this <b>course</b> the student should be able to 1. Define the basics of the relational data model. Lists the database design process steps. Will be able to design and implement properly structured databases that match the standards based under realistic constraints and conditions. 2. Develops an Entity-Relationship model based on user requirements.
17	BCA III sem.	E Business Essential	students will be able to: 1. Understand the fundamental and importance of E-commerce 2. Gain knowledge of different types in E-commerce: C2C, C2B, B2C, B2B, G2C 3. Analyze the impact of E-commerce on business models and strategy 4. Learn about the infrastructure for E-commerce 5. Learn the key features of Internet, Intranets, Extranets and web technology and how they relate to each other. 6. Know the legal issues and privacy in E-Commerce 7. Assess the electronic payment systems
18	BCA III sem.	Data Structure and algo.	Students will be able to: 1. Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms. 2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs . 3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs

19	BCA IV sem.	Cost Accounting	<p>students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand various costing systems and management systems.</li> <li>2. Analyse and provide recommendations to improve the operations of organisations through the application of Cost and Management accounting techniques.</li> <li>3. Evaluate the costs and benefits of different conventional and contemporary costing systems</li> <li>4. Differentiate methods of schedule costs as per unit of production</li> <li>5. Differentiate methods of calculating stock consumption</li> <li>6. Identify the specifics of different costing methods</li> </ol>
20	BCA IV sem.	JAVA	<p>On completion of the course the student should be able to:</p> <ol style="list-style-type: none"> <li>1. Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.</li> <li>2. Read and make elementary modifications to Java programs that solve real-world problems. Validate input in a <b>Java</b> program.</li> </ol>
21	BCA IV sem.	MIS & DSS	<ol style="list-style-type: none"> <li>1. Relate the basic concepts and technologies used in the field of management information systems;</li> <li>2. Compare the processes of developing and implementing information systems.</li> <li>3. Outline the role of the ethical, social, and security issues of information systems.</li> <li>4. Translate the role of information systems in organizations, the strategic management processes, with the implications for the management.</li> <li>5. Apply the understanding of how various information systems like DBMS work together to accomplish the information objectives of an organization.</li> <li>6. Study the components of DSS and the main players who participate in the decision process</li> </ol>
22	BCA IV sem.	B. Law - II	<p>Demonstrate an understanding of the Legal Environment of Business.</p> <ol style="list-style-type: none"> <li>1. Communicate effectively using standard business and legal terminology.</li> <li>2. Demonstrate recognition of the requirements of the contract agreement</li> <li>3. Demonstrate understanding of contract</li> </ol>

			<p>consideration and capacity</p> <ol style="list-style-type: none"> <li>4. Demonstrate recognition of the genuineness of assent in contract formation.</li> <li>5. Demonstrate understanding of legality and Statute of Frauds in contracts</li> <li>6. Identify contract remedies</li> <li>7. Demonstrate recognition of transactions involving the Sales of Goods Act</li> </ol>
23	BCA IV sem.	Entrepreneurship	<ol style="list-style-type: none"> <li>1. Understand the nature of entrepreneurship</li> <li>2. Understand the function of the entrepreneur in the successful, commercial application of innovations.</li> <li>3. Confirm an entrepreneurial business idea</li> <li>4. Identify personal attributes that enable best use of entrepreneurial opportunities</li> <li>5. Explore entrepreneurial leadership and management style.</li> </ol>
24	BCA IV sem.	PC Maintenance	<ol style="list-style-type: none"> <li>1. Fundamentals of Hardware, handling, testing and troubleshooting of personal computer problems.</li> <li>2. Diagnose &amp; repair problems of Desktop/Laptop.</li> <li>3. Identify existing configuration of the computer and peripherals and to troubleshoot common problems</li> </ol>
25	BCA V sem.	Management Accounting	<p>students will be able to:</p> <ol style="list-style-type: none"> <li>1. Apply management accounting and its objectives in facilitating decision making.</li> <li>2. Apply and analyze different types of activity-based management tools through the preparation of estimates.</li> <li>3. Analyze cost-volume-profit techniques to determine optimal managerial decisions.</li> <li>4. Apply management accounting and its objectives in facilitating decision making.</li> <li>5. Apply and analyze different types of activity-based management tools through the preparation of estimates.</li> <li>6. Prepare Cash Flow and Funds Flow statements this helps in planning for intermediate and long-term finances.</li> <li>7. Calculate Ratios</li> </ol>
26	BCA V sem.	SQL 2017	<p>the student should be able to:</p> <ol style="list-style-type: none"> <li>1. Write complex SQL queries to retrieve information for business decision making from databases with many tables.</li> </ol>

			2. Write SQL DDL to create, modify and drop objects within a relational database. Retrieve and store information in a relational database using SQL in a multi-user, web based environment.
27	BCA V sem.	Visual Basic	<ol style="list-style-type: none"> <li>1. Students list the visual programming concepts.</li> <li>2. Explain basic concepts and definitions.</li> <li>3. Express constants and arithmetic operations.</li> <li>4. Distinguish variable and data types.</li> <li>5. Students code visual programs by using Visual Basic work environment.</li> <li>6. Distinguish and compose events and methods.</li> </ol>
28	BCA V sem.	Organization Behaviour	On completion of this course students will be able to analyze and compare different models used to explain individual behaviour related to motivation and rewards. to identify the processes used in developing communication and resolving conflicts. to explain group dynamics and demonstrate skills required for working in groups (team building)
29	BCA V sem.	Software Engg.	<p>students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the process of software development.</li> <li>2. The types of SE models and how to use them.</li> <li>3. Understand different phases of SDLC.</li> <li>4. Need of Documentation, Maintenance and testing.</li> </ol>
30	BCA V sem.	Banking & Insurance	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the Concept of banks and risks faced by banks and ways to overcome them.</li> <li>2. Understand the difference between Life &amp; Non Life Insurance.</li> <li>3. Understand how to choose life insurance policies based on their needs</li> </ol>
31	BCA VI sem.	Elements of Commercial Portal	Students will be able to know the elements of the commercial portal XML, JQuery, AJAX etc.
32	BCA VI sem.	Android 9	<p>Students will able to</p> <ol style="list-style-type: none"> <li>1. Install and configure Android application development tools.</li> <li>2. Design and develop user Interfaces for the Android platform.</li> <li>3. understanding various controls in android and their events.</li> <li>4. Apply Java programming concepts to Android application development.</li> <li>5. understanding fragments, layouts and deploying application to publish on Play Store</li> </ol>
33	BCA VI	B.Law III	1. Analyze and evaluate the cyber security needs of



	sem.		<p>an organization.</p> <ol style="list-style-type: none"> <li>Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.</li> <li>Measure the performance and troubleshoot cyber security systems.</li> <li>To understand different types of Viruses, frauds and how to deal with that.</li> <li>To know about Teenage Vandalism, Pronography offences .</li> </ol>
34	BCA VI sem.	Software Testing	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>To study fundamental concepts in software testing</li> <li>To discuss various software testing issues and solutions in software unit test, integration and system testing.</li> <li>To expose the advanced software testing topics, such as object-oriented software testing methods.</li> </ol>
35	BCA VI sem.	Service Marketing	<ol style="list-style-type: none"> <li>Explain the significance of services marketing in the global economy and the deeper aspects of successful services marketing. also found challenges and opportunities in services marketing</li> <li>Understand and explain the nature and scope of services marketing and present about this in a professional and engaging manner.</li> <li>Understand the expectations of customers and know how to translate this knowledge into genuine value for customers</li> <li>Understand current research trends in services marketing and management</li> </ol>
36	BCA VI sem.	Project	<p>Students of VI semester have to implement a project based on the languages they have studied in their academics. This will make them understand a total system and to convert it into coding. This develops their thinking and implementing skills.</p>
1	B. Sc. CS I Sem	Computer Fundamental	<ol style="list-style-type: none"> <li>Bridge the fundamental concepts of computers with the present level of knowledge of the students.</li> <li>Familiarise operating systems, programming languages, peripheral devices, networking, multimedia and internet</li> </ol>
2	B. Sc. CS I Sem	Digital Electronics	<ol style="list-style-type: none"> <li>Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.</li> <li>To understand and examine the structure of various number systems and its application in</li> </ol>

			digital design.
3	B. Sc. CS I Sem	Microprocessor 1	At the end of the course, a student will be able to: 1. Assess and solve basic binary math operations using the microprocessor and explain the microprocessor and Microcontroller's internal architecture and its operation within the area of manufacturing and performance. 2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller. 3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements. 4. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller
4	B. Sc. CS I Sem	C Programming-I	By the end of the course students will be able to: 1. Know about the history and features of C programming language 2. Interpret the basic principles of C Programming. 3. Acquire decision making and looping concepts. 4. Design and develop modular programming. 5. Explore usage of Arrays, array manipulation and strings
5	B. Sc. CS I Sem	Communication skills I	1. Students will be able to improve their Listening Skills. 2. Students will be able to improve their reading comprehension. 3. Students will be able to participate in group discussion. 4. Students will be able to know the interview techniques.
6	B. Sc. CS I Sem	Mathematical Foundation	On completion of this course student be able to: 1. Write an argument using logical notation and determine if the argument is or is not valid. 2. Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described. 3. Understand the basic principles of sets and operations in sets. 4. Prove basic set equalities. 5. Apply counting principles to determine

			<p>probabilities.</p> <p>6. Demonstrate an understanding of relations and functions and be able to determine their properties.</p> <p>7. Determine when a function is 1-1 and "onto".</p> <p>8. Demonstrate different traversal methods for trees and graphs.</p> <p>9. Model problems in Computer Science using graphs and trees.</p>
7	B. Sc. CS II Sem	Data Structure	<p>1. Study different advanced data structures types and their respective algorithms.</p> <p>2. Have practical knowledge on the applications of data structures.</p> <p>3. Select appropriate data structures as applied to specified problem definition.</p> <p>4. Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various advance data structures.</p> <p>5. Implement appropriate sorting/searching technique for given problem.</p> <p>6. Design advance data structure using Nonlinear data structure.</p>
8	B. Sc. CS II Sem	Operating System	<p>Students will able to:</p> <ol style="list-style-type: none"> <li>1. Describe the important computer system resources and the role of operating systems in their management policies and algorithms.</li> <li>2. Understand the process management policies and scheduling of processes by CPU</li> <li>3. Evaluate the requirement for process synchronization and coordination handled by operating system</li> <li>4. Describe and analyze the memory management and its allocation policies.</li> <li>5. Identify use and evaluate the storage management policies with respect to different storage management technologies.</li> <li>6. Identify the need to create the special purpose operating system.</li> </ol>
9	B. Sc. CS II Sem	Micro processor II	<p>At the end of the course, a student will be able to:</p> <ol style="list-style-type: none"> <li>1. Assess and solve basic binary math operations using the microprocessor and explain the microprocessor and Microcontroller's internal architecture and its operation within the area of manufacturing and performance.</li> <li>2. Apply knowledge and demonstrate programming</li> </ol>

			<p>proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.</p> <ol style="list-style-type: none"> <li>3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 &amp; 8086) and Microcontroller to meet specified performance requirements.</li> <li>4. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller.</li> <li>5. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.</li> <li>6. Evaluate assembly language programs and download the machine code that will provide solutions real- world control problems.</li> </ol>
10	B. Sc. CS II Sem	C Programming-II	<p>Upon completion of this course, students will:</p> <ol style="list-style-type: none"> <li>1 Demonstrate computer C programming language concepts.</li> <li>2. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.</li> <li>3. Students must be able to define structure, union and enumeration user defined data types and file handling.</li> </ol>
11	B. Sc. CS II Sem	Communication skills II	<ol style="list-style-type: none"> <li>1. Students will be able to improve their Listening Skills.</li> <li>2. Students will be able to improve their reading comprehension.</li> <li>3. Students will be able to participate in group discussion.</li> <li>4. Students will be able to know the interview techniques.</li> </ol>
12	B. Sc. CS II Sem	Numerical Computation Method	<p>students will be able to:</p> <ol style="list-style-type: none"> <li>1.Understand the difference between actual and approximate values.</li> <li>2.Understand Different types of errors.</li> <li>3.Understand the difference between Different root finding techniques.</li> <li>4.Learn how to use different methods to compute approximate answers to real life problems.</li> </ol>
13	B. Sc. CS III Sem	Advanced Data Structure	<ol style="list-style-type: none"> <li>1.Design and analyze programming problem statements.</li> </ol>

			<p>2.Choose appropriate data structures and algorithms, 3.Understand the ADT/libraries, and use it to design algorithms for a specific problem.</p> <p>4.Understand the necessary mathematical abstraction to solve problems.</p> <p>5. Come up with analysis of efficiency and proofs of correctness</p> <p>6. Comprehend and select algorithm design approaches in a problem specific manner.</p>
14	B. Sc. CS III Sem	UNIX Operating System	<p>1.To familiarize students with the concepts, design, and structure of the UNIX operating system.</p> <p>2.To teach students the use of basic UNIX Utilities</p> <p>3.To teach students the principles of UNIX shell programming.</p>
15	B. Sc. CS III Sem	Database Management System	<p>On completion of this course student be able to:</p> <ol style="list-style-type: none"> <li>1.Install, configure, and interact with a relational database management system.</li> <li>2.Learn and apply the Structured Query Language (SQL) for database definition and manipulation.</li> <li>3.Master the basic concepts and appreciate the applications of database systems.</li> <li>4.Master the basics of SQL and construct queries using SQL.</li> <li>5.Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.</li> <li>6.Be familiar with relational database theory, and be able to write relational algebra expressions for queries.</li> <li>7.Master sound design principles for logical design of databases, including the E- R method and normalization approach.</li> </ol>
16	B. Sc. CS III Sem	PC Maintenance	<p>On successful completion of this course a participant shall be able to:</p> <ol style="list-style-type: none"> <li>1. Understand basic concept &amp; structure of Computer Hardware &amp; Networking Components.</li> <li>2. Identify the existing configuration of the computers &amp; peripherals.</li> <li>3. Upgrading the same as &amp; when required.</li> <li>4. Apply their knowledge about computer peripherals to identify/rectify problems on board.</li> <li>5. Integrate the PC's into Local Area Network &amp; re-install OS &amp; various shipboard applications.</li> </ol>

17	B. Sc. CS III Sem	Programming in C++	<p>Upon completion of this course, the students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the difference between the top-down and bottom-up approach</li> <li>2. Apply the concepts of object-oriented programming</li> <li>3. Demonstrate the use of various OOPs concepts with the help of programs.</li> <li>4. Describe the concept of function overloading, operator overloading, and polymorphism.</li> <li>5. develop software in the C++ programming language</li> </ol>
18	B. Sc. CS III Sem	Statistical Method	<p>Students learn to design data collection plans and basic tools of descriptive statistics.</p> <ol style="list-style-type: none"> <li>1. Organize, manage and present data.</li> <li>2. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.</li> <li>3. Analyze statistical data using measures of central tendency, dispersion and location.</li> <li>4. Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.</li> <li>5. Translate real-world problems into probability models.</li> </ol>
19	B. Sc. CS IV Sem	Software Engg.	<p>Students will able to:</p> <ol style="list-style-type: none"> <li>1. Define various software application domains and remember different process models used in software development.</li> <li>2. Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques</li> <li>3. Convert the requirements model into the design model and demonstrate use of software and user interface design principles.</li> </ol>
20	B. Sc. CS IV Sem	FEDORA	<ol style="list-style-type: none"> <li>1. Describe the relationship between GNU and Linux.</li> <li>2. Describe the relationship between Linux and Unix.</li> <li>3. Discuss features which make Linux a viable and popular operating system.</li> <li>4. Describe various operating system concepts such as multitasking, virtual memory and multiuser environments as they apply to Fedora Linux</li> </ol>
21	B. Sc. CS IV	Basic	After completing this course the student must

	Sem	Networking	demonstrate the knowledge and ability to: 1. Independently understand basic computer network technology. 2. Understand and explain Data Communications System and its components. 3. Identify the different types of network topologies and protocols. 4. Enumerate the different multiplexing and modulation, switching types. 5. Identify the different types of network devices and their functions within a network 6. Understand and build the skills of sub netting and routing mechanisms. 7. Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
22	B. Sc. CS IV Sem	Core Java-I	On completion of the course the student should be able to: 1. Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs. 2. Read and make elementary modifications to Java programs that solve real-world problems. 3. Validate input in a Java program.
23	B. Sc. CS IV Sem	Advance DBMS	On completion of this course student be able to: 1. Explain the principles of concurrency control. 2. Explain the principles of recovery management. 3. Know recent developments and active research topics in the database. 4. Student will be able to perform queries on databases.
24	B. Sc. CS IV Sem	Web Fundamental	The student will be able to: 1. Analyze a web page and identify its elements and attributes. 2. Create web pages using XHTML and Cascading Style Sheets. Build dynamic web pages using JavaScript (Client side programming). 3. Build interactive web applications using AJAX.
25	B. Sc. CS V Sem	Core Java II	At the end of this course students will be able to: 1. Understand Input/output Stream and its operations 2. Explore Applets and Graphics 3. Develop the applications using Java Database

			Connectivity (JDBC) 4.Develop the applications using networking.
26	B. Sc. CS V Sem	Basic of Android	By the end of the course students will be able to: 1.Install and Android application development tools. 2.Design and develop user Interfaces for the Android platform. 3.Apply Java programming concepts to Android application development. By the end of the course, student will be able to write simple GUI applications, use built-in widgets and components
27	B. Sc. CS V Sem	Software cost estimation	1.Apply project management concepts and techniques to an IT project. 2.Identify estimation technique for software development. 3. Explain project management in terms of the software development process. 4.Describe the responsibilities of IT project managers. 5. Apply cost estimation concepts through working in a group as team leader or active team member on and IT project.
28	B. Sc. CS V Sem	Basic of computer graphics	Students will able to: 1. To list the basic concepts used in computer graphics. 2. To implement various algorithms to scan, convert the basic geometrical primitives, transformations,
29	B. Sc. CS V Sem	Elective 1 : PHP Prog ASP.net	After successful completion of this course, students will be able to: 1. Write PHP scripts to handle HTML forms. 2. Write regular expressions including modifiers, operators, and meta characters. 3. Create PHP programs that use various PHP library functions, and that manipulate files and directories.
30	B. Sc. CS V Sem	Elective 2: Data Mining Advanced Networking	1. Understand Data Warehouse fundamentals, Data Mining Principles 2. Design data warehouse with dimensional modeling and apply OLAP operations. 3. Identify appropriate data mining algorithms to solve real world problems 4. Compare and evaluate different data mining techniques like classification, prediction, clustering



			<p>and association rule mining</p> <ol style="list-style-type: none"> <li>5. Describe complex data types with respect to spatial and web mining.</li> <li>6. Benefit the user experiences towards research and innovation. integration.</li> </ol>
31	B. Sc. CS VI Sem	Software Quality and Testing	<p>Students will try to learn:</p> <ol style="list-style-type: none"> <li>1 Basic software debugging methods.</li> <li>2. White box testing methods and techniques.</li> <li>3. Black Box testing methods and techniques.</li> <li>4. Designing test plans.</li> <li>5 Different testing tools (familiar with open source tools)</li> <li>6. Quality Assurance models.</li> </ol>
32	B. Sc. CS VI Sem	Android Application Development	<ol style="list-style-type: none"> <li>1. The students develop understanding of the fundamentals of Android operating systems</li> <li>2. Students can demonstrate their skills of using Android software development tools</li> <li>3. Students develop the ability to develop software with reasonable complexity on mobile platform</li> <li>4. Students will be able to deploy software to mobile devices</li> <li>5. Students develop the ability to debug programs running on mobile devices</li> </ol>
33	B. Sc. CS VI Sem	Theory of Computation	<p>At the end of the course, students:</p> <ol style="list-style-type: none"> <li>1. will apply knowledge of computing and mathematics appropriate to the discipline.</li> <li>2. will function effectively as a member of a team in order to accomplish a common goal.</li> <li>3. will apply mathematical foundations, algorithmic principles and computer science theory to the modeling and design of computer based systems in a way that demonstrates</li> </ol>
34	B. Sc. CS VI Sem	Advanced Computer Graphics	<p>Students will able to:</p> <ol style="list-style-type: none"> <li>1. To list the basic concepts used in computer graphics.</li> <li>2. To implement various algorithms to scan, convert the basic geometrical primitives, transformations,</li> <li>3. To describe the importance of viewing and projections.</li> <li>4. To define the fundamentals of animation, virtual reality and its related technologies.</li> </ol>
35	B. Sc. CS VI Sem	Elective 1 Advance PHP	<p>After successful completion of this course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Write PHP scripts to handle HTML forms.</li> </ol>

			<p>2. Write regular expressions including modifiers, operators, and metacharacters.</p> <p>3. Create PHP programs that use various PHP library functions, and that manipulate files and directories.</p> <p>4. Analyze and solve various database tasks using the PHP language.</p> <p>5. Analyze and solve common Web application tasks by writing PHP programs.</p>
36	B. Sc. CS VI Sem	Elective 2 Programming Language: C#	<p>1. Understand code solutions and compile C# projects within the</p> <p>.2. Design and develop professional console and window based .</p> <p>3. Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements C#.NET application.</p>
1	B. Sc. IT I Sem	Computer Fundamental	<p>1. Bridge the fundamental concepts of computers with the present level of knowledge of the students.</p> <p>2. Familiarise operating systems, programming languages, peripheral devices, networking, multimedia and internet</p>
2	B. Sc. IT I Sem	Digital Electronics	<p>1. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.</p> <p>2. To understand and examine the structure of various number systems and its application in digital design.</p> <p>At the end of the course, a student will be able to:</p> <p>1. Assess and solve basic binary math operations using the microprocessor and explain the microprocessor and Microcontroller's internal architecture and its operation within the area of manufacturing and performance.</p> <p>2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.</p> <p>3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 &amp; 8086) and Microcontroller to meet specified performance requirements.</p> <p>4. Analyze assembly language programs; select appropriate assemble into machine a cross</p>

			assembler utility of a microprocessor and microcontroller
3	B. Sc. IT I Sem	Microprocessor 1	<p>1. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.</p> <p>2. To understand and examine the structure of various number systems and its application in digital design.</p> <p>At the end of the course, a student will be able to:</p> <p>1. Assess and solve basic binary math operations using the microprocessor and explain the microprocessor and Microcontroller's internal architecture and its operation within the area of manufacturing and performance.</p> <p>2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.</p> <p>3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 &amp; 8086) and Microcontroller to meet specified performance requirements.</p> <p>4. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller</p>
4	B. Sc. IT I Sem	C Programming-I	<p>By the end of the course students will be able to:</p> <p>1. Know about the history and features of C programming language</p> <p>2. Interpret the basic principles of C Programming.</p> <p>3. Acquire decision making and looping concepts.</p> <p>4. Design and develop modular programming.</p> <p>5. Explore usage of Arrays, array manipulation and strings</p>
5	B. Sc. IT I Sem	Communication skills I	<p>1. Students will be able to improve their Listening Skills.</p> <p>2. Students will be able to improve their reading comprehension.</p> <p>3. Students will be able to participate in group discussion.</p> <p>4. Students will be able to know the interview techniques.</p>
6	B. Sc. IT I Sem	Mathematical Foundation	<p>On completion of this course student be able to:</p> <p>1. Write an argument using logical notation and</p>

			<p>determine if the argument is or is not valid.</p> <ol style="list-style-type: none"> <li>2. Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.</li> <li>3. Understand the basic principles of sets and operations in sets.</li> <li>4. Prove basic set equalities.</li> <li>5. Apply counting principles to determine probabilities.</li> <li>6. Demonstrate an understanding of relations and functions and be able to determine their properties.</li> <li>7. Determine when a function is 1-1 and "onto".</li> <li>8. Demonstrate different traversal methods for trees and graphs.</li> <li>9. Model problems in Computer Science using graphs and trees.</li> </ol>
7	B. Sc. IT II Sem	Data Structure	<p>After completing this course satisfactorily, a student will be able to:</p> <ol style="list-style-type: none"> <li>1. Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms</li> <li>2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs</li> <li>3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs</li> <li>4. Demonstrate different methods for traversing trees</li> <li>5. Compare alternative implementations of data structures with respect to performance</li> <li>6. Compare and contrast the benefits of dynamic and static data structures implementations</li> </ol>
8	B. Sc. IT II Sem	Operating System	<p>On completion of this course student be able to:</p> <ol style="list-style-type: none"> <li>1. Write an argument using logical notation and determine if the argument is or is not valid.</li> <li>2. Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.</li> <li>3. Understand the basic principles of sets and operations in sets.</li> <li>4. Prove basic set equalities.</li> <li>5. Apply counting principles to determine probabilities.</li> <li>6. Demonstrate an understanding of relations and</li> </ol>

			<p>functions and be able to determine their properties.</p> <p>7. Determine when a function is 1-1 and "onto".</p> <p>8. Demonstrate different traversal methods for trees and graphs.</p> <p>9. Model problems in Computer Science using graphs and trees.</p>
9	B. Sc. IT II Sem	IT Tools and Web Designing	<p>1. Study different advanced data structures types and their respective algorithms.</p> <p>2. Have practical knowledge on the applications of data structures.</p> <p>3. Select appropriate data structures as applied to specified problem definition.</p> <p>4. Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various advanced data structures.</p> <p>5. Implement appropriate sorting/searching techniques for a given problem.</p> <p>6. Design advanced data structure using Nonlinear data structure.</p>
10	B. Sc. IT II Sem	C Programming II	<p>Upon completion of the course, students will be able to:</p> <p>1. Understand the concept pointers, structure and union</p> <p>2. Understand the library functions and implementation</p> <p>3. Understand the File handling functions.</p> <p>4. Develop software in the C programming language.</p>
11	B. Sc. IT II Sem	Communication skills II	<p>1. Students will be able to improve their Listening Skills.</p> <p>2. Students will be able to improve their reading comprehension.</p> <p>3. Students will be able to participate in group discussion.</p> <p>4. Students will be able to know the interview techniques.</p>
12	B. Sc. IT II Sem	Numerical Computation Method	<p>students will be able to:</p> <p>1. Understand the difference between actual and approximate values.</p> <p>2. Understand Different types of errors.</p> <p>3. Understand the difference between Different root finding techniques.</p>

			4.Learn how to use different methods to compute approximate answers to real life problems.
13	B. Sc. IT III Sem	DBMS	<p>On completion of this course student be able to:</p> <ol style="list-style-type: none"> <li>1.Install, configure, and interact with a relational database management system.</li> <li>2.Learn and apply the Structured Query Language (SQL) for database definition and manipulation.</li> <li>3.Master the basic concepts and appreciate the applications of database systems.</li> <li>4.Master the basics of SQL and construct queries using SQL.</li> <li>5.Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.</li> <li>6.Be familiar with relational database theory, and be able to write relational algebra expressions for queries.</li> <li>7.Master sound design principles for logical design of databases, including the E- R method and normalization approach.</li> </ol>
14	B. Sc. IT III Sem	Android 1	<p>By the end of the course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Install and Android application development tools.</li> <li>2. Design and develop user Interfaces for the Android platform.</li> <li>3. Apply Java programming concepts to Android application development.</li> <li>4. By the end of the course, student will be able to write simple GUI applications, use built-in widgets and components</li> </ol>
15	B. Sc. IT III Sem	IT Tool and web designing II	<p>By successfully completing this course, students will be able to: Describe introduction to HTML5 and what basic web design is. Identify how to create a simple web page. Identify how to format your text. Know variable naming rules and <b>JavaScript</b> data types.</p> <ol style="list-style-type: none"> <li>1. Identify expressions and operators.</li> <li>2. Know flow control.</li> <li>3. Demonstrate objects and arrays usage.</li> <li>4. Define functions and methods.</li> <li>5. Define constructors and inheritance.</li> <li>6. Demonstrate usage of pattern matching with regular expressions.</li> </ol>
16	B. Sc. IT III Sem	Programming in CPP II	Upon completion of this course, the students will be

			<p>able to:</p> <ol style="list-style-type: none"> <li>1.Understand the difference between the top-down and bottom-up approach</li> <li>2.Apply the concepts of object-oriented programming</li> <li>3.Demonstrate the use of various OOPs concepts with the help of programs.</li> <li>4.Describe the concept of function overloading, operator overloading, and polymorphism.</li> <li>5.Develop software in the C++ programming language,</li> </ol>
17	B. Sc. IT III Sem	Personality development	<ol style="list-style-type: none"> <li>1. The Personality Development Programmes will groom their overall personality.</li> <li>2. This course will help them to experience a positive attitude.</li> <li>3. This course will help them to rise in confidence level.</li> </ol>
18	B. Sc. IT III Sem	Statistical Method	<p>Students learn to design data collection plans and basic tools of descriptive statistics.</p> <ol style="list-style-type: none"> <li>1. Organize, manage and present data.</li> <li>2. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.</li> <li>3. Analyze statistical data using measures of central tendency, dispersion and location.</li> <li>4. Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.</li> <li>5. Translate real-world problems into probability models.</li> </ol>
19	B. Sc. IT IV Sem	Advanced DBMS	<p>On completion of this course student be able to:</p> <ol style="list-style-type: none"> <li>1.Explain the principles of concurrency control.</li> <li>2.Explain the principles of recovery management.</li> <li>3.Know recent developments and active research topics in the database.</li> <li>4.student will be able to perform queries on the database.</li> </ol>
20	B. Sc. IT IV Sem	Advanced Android application & Development	<ol style="list-style-type: none"> <li>1. The students develop understanding of the fundamentals of Android operating systems</li> <li>2. Students can demonstrate their skills of using Android software development tools</li> </ol>

			<p>3. Students develop the ability to develop software with reasonable complexity on mobile platform</p> <p>4. Students will be able to deploy software to mobile devices</p>
21	B. Sc. IT IV Sem	IT Tools & web designing II	<p>1. Be able to use the HTML programming language.</p> <p>2. Resolves written HTML codes.</p> <p>3. Runs the page he/she has designed using HTML codes.</p> <p>4. Be able to use the Design Programs.</p> <p>5. Uses Microsoft Expression Web 4 programme.</p> <p>6. Designs site and page via Microsoft Expression Web programme.</p> <p>7. Uses the program Web Page Maker.</p>
22	B. Sc. IT IV Sem	Core Java-I	<p>At the end of this course, each student should be able to:</p> <p>1. List and use Object Oriented Programming concepts for problem solving.</p> <p>2. Write programs using Java collection API as well as the java standard class library.</p> <p>3. Solve the interdisciplinary applications using the concept of inheritance.</p> <p>4. Apply JDBC to provide a program level interface for communicating with database using java programming.</p> <p>5. Apply the garbage collection for saving the resources automatically</p>
23	B. Sc. IT IV Sem	Aptitude and logical reasoning	<p>On successful completion of the course the students will be able to:</p> <p>1. Understand the basic concepts of QUANTITATIVE ABILITY</p> <p>2. Understand the basic concepts of LOGICAL REASONING Skills</p> <p>3. Acquire satisfactory competency in use of VERBAL REASONING</p> <p>4. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability</p> <p>5. Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc.</p>
24	B. Sc. IT IV Sem	Software Project Management-I	<p>After completing this course the students will be able to:</p> <p>1. Apply project management concepts and techniques to an IT project.</p>



			<p>2. Identify issues that could lead to IT project success or failure.</p> <p>3. Explain project management in terms of the software development process.</p>
25	B. Sc. IT V Sem	Software Project Management II	<p>After completing this course the students will be able to:</p> <ol style="list-style-type: none"> <li>1. Apply project management concepts through working in a group as team leader or active team member on an IT project.</li> <li>2. Describe the responsibilities of IT project managers</li> <li>3. Recognize, trace and resolve IT related crises using project management software</li> </ol>
26	B. Sc. IT V Sem	Data communication and Networking	<p>After completing this course the student must demonstrate the knowledge and ability to:</p> <ol style="list-style-type: none"> <li>1. Independently understand basic computer network technology.</li> <li>2. Understand and explain Data Communications System and its components.</li> <li>3. Identify the different types of network topologies and protocols.</li> <li>4. Enumerate the different multiplexing and modulation, switching types.</li> <li>5. Identify the different types of network devices and their functions within a network</li> <li>6. Understand and build the skills of sub netting and routing mechanisms.</li> <li>7. Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.</li> </ol>
27	B. Sc. IT V Sem	Programming with PHP	<p>After successful completion of this course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Write PHP scripts to handle HTML forms.</li> <li>2. Write regular expressions including modifiers, operators, and meta characters.</li> <li>3. Create PHP programs that use various PHP library functions, and that manipulate files and directories.</li> </ol>
28	B. Sc. IT V Sem	Ethical Hacking	<ol style="list-style-type: none"> <li>1. Think critically</li> <li>2. Perform and share cooperatively in team projects</li> <li>3. Review and practice computer and network etiquette and ethics found in working environments</li> <li>4. Evaluate and implement new and future technologies into current system</li> <li>5. Install, configure, use and manage hacking software on a closed network environment</li> </ol>

			6. Evaluate best practices in security concepts to maintain confidentiality, integrity and availability of computer systems
29	B. Sc. IT V Sem	Elective 1 Data Mining	After successful completion of this course, students will be able to: 1.Evaluate different models used for data preprocessing. categorize and carefully differentiate between situations for applying different data-mining techniques: frequent pattern mining, association, correlation, classification, prediction, cluster, and outlier analysis.
30	B. Sc. IT V Sem	Elective 2 Computer Graphics	Students will able to: 1. To list the basic concepts used in computer graphics. 2. To implement various algorithms to scan, convert the basic geometrical primitives, transformations
31	B. Sc. IT VI Sem	Software Testing and Quality Assurance	The student should be able to: 1.Understand software testing and quality assurance as a fundamental component of software life cycle 2.Define the scope of software testing and quality assurance projects 3.Efficiently perform software testing and quality assurance activities using modern software tools. 4.Estimate cost of a testing and quality assurance project and manage budgets 5.Prepare test plans and schedules for testing and quality assurance project 6.Develop testing and quality assurance project staffing requirements. Effectively manage a software projects
32	B. Sc. IT VI Sem	Wireless networking	By the end of the course students will be able to: 1. To study the evolving wireless technologies and standards · 2. To understand the architectures of various access technologies such as 1G, 2G, 3G, 4G, WiFi etc. · 3. To understand various protocols and services provided by next generation networks. 4. Keep themselves updated on latest wireless technologies and trends in the communication field 5. Understand the transmission of voice and data

			through various networks
33	B. Sc. IT VI Sem	Advanced Programming with PHP	<p>After successful completion of this course, students will be able to:</p> <ol style="list-style-type: none"> <li>1: Write PHP scripts to handle HTML forms.</li> <li>2: Write regular expressions including modifiers, operators, and met characters.</li> <li>3: Create PHP programs that use various PHP library functions, and that manipulate files and directories.</li> <li>4: Analyze and solve various database tasks using the PHP language.</li> <li>5: Analyze and solve common Web application tasks by writing PHP programs.</li> </ol>
34	B. Sc. IT VI Sem	Cyber Law and Security	<ol style="list-style-type: none"> <li>1. Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure.</li> <li>2. Design, develop, test and evaluate secure software.</li> <li>3. Develop policies and procedures to manage enterprise security risks.</li> <li>4. Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training.</li> </ol> <p>Interpret and forensically investigate security incidents.</p>
35	B. Sc. IT VI Sem	Elective 1 AJAX	<p>At the end of this course the successful student will be able to:</p> <ol style="list-style-type: none"> <li>1. Explain client-side concepts and compare and contrast client-side versus server-side scripting.</li> <li>2. Use JavaScript to add dynamic content to pages.</li> <li>3. Write well-structured, easily maintained JavaScript code following accepted good practice.</li> <li>4. Write JavaScript code that works in all major browsers. Program using DOM API to traverse, modify, and append nodes to documents, event handlers to handle user-triggered events. JavaScript to validate form data and to manage state information.</li> <li>5. Use front-end JavaScript libraries and frameworks (e.g., jQuery)</li> <li>6. Use Ajax to fetch information from the server and display it on the web page.</li> <li>7. Create web applications with Ajax.</li> </ol>

36	B. Sc. IT VI Sem	Elective 2 C# Programming	<ol style="list-style-type: none"> <li>1. Understand code solutions and compile C# projects within the</li> <li>2. Design and develop professional console and window based</li> <li>3. Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements C#.NET application.</li> </ol>
1	B. Sc. AT I sem.	Communication skills I	<ol style="list-style-type: none"> <li>1. Students will be able to improve their Listening Skills.</li> <li>2. Students will be able to improve their reading comprehension.</li> <li>3. Students will be able to participate in group discussion.</li> <li>4. Students will be able to know the interview techniques.</li> </ol>
2	B. Sc. AT I sem.	Computer Technique I	<ol style="list-style-type: none"> <li>1 Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming</li> <li>2. Familiarise operating systems, programming languages, peripheral devices, networking, multimedia and internet</li> <li>3. Understand binary, hexadecimal and octal number systems and their arithmetic.</li> <li>4. Understand how logic circuits and Boolean algebra forms as the basics of digital computers.</li> </ol>
3	B. Sc. AT I sem.	Basic Electronics I	<p>Students will able to</p> <ol style="list-style-type: none"> <li>1. know of some basic electronic components and circuits.</li> <li>2. understand working of some I C based circuits</li> <li>3. working of some power electronic devices, transducers and application of transducers.</li> </ol>
4	B. Sc. AT I sem.	Workshop Technology I	<ol style="list-style-type: none"> <li>1. Students will be understand various types of safety and how to get precaution on workplace</li> <li>2. Students will be to improve of various working method and benchwork practices</li> <li>3. Students will be handle and understand the various types of hand tools and their work</li> <li>4. Students will be understand various types of manufacturing process and there material requirement</li> </ol>
5	B. Sc. AT I sem.	Engg. Drawing I	<ol style="list-style-type: none"> <li>1. Students are able to use the drafting instruments properly and improve their lettering and</li> </ol>

			<p>dimensioning skills.</p> <ol style="list-style-type: none"> <li>2. Student's ability to perform basic sketching techniques will improve.</li> <li>3. Students will be able to perform basic Geometrical constructions, curves used in mechanical engineering practices.</li> <li>4. Student's ability to use architectural and engineering scales will increase.</li> <li>5. Students will be able to draw free hand sketching of multiple views from pictorial objects.</li> <li>6. Students are able to interpret and comprehend a sketch.</li> <li>7. Students are able to draw multiview orthographic and other projections including isometric, sectional, and perspective.</li> <li>8. Students will be able to extract information from drawings and geometric models to solve mechanical engineering problems.</li> <li>9. Students are able to draw the basic building drawings.</li> <li>10. Students will become familiar with drafting packages for mechanical engineering practice.</li> </ol>
6	B. Sc. AT I sem.	Fundamental of Mechanical Engg.	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1. Explain the basic terminology of mechanical engineering.</li> <li>2. Differentiate between various forms of energy.</li> <li>3. Understand and apply various laws of thermodynamics.</li> <li>4. Understand the ideal gas equation and its application to various thermodynamic processes.</li> <li>5. Understand properties of steam which is used as a working substance in thermal power plants.</li> <li>6. Understand various basics of fuels and its combustion.</li> <li>7. Understand and explain various mechanical energy converting devices.</li> <li>8. Suggest some alternative renewable energy sources for green energy harnessing.</li> </ol>
7		Communication skills II	<ol style="list-style-type: none"> <li>1. Students will be able to improve their Listening Skills.</li> <li>2. Students will be able to improve their reading comprehension.</li> <li>3. Students will be able to participate in group discussion.</li> <li>4. Students will be able to know the interview</li> </ol>

			techniques.
8	B. Sc. AT II sem.	Computer Technique II	<ol style="list-style-type: none"> <li>1. exhibit improved understanding of computer operations</li> <li>2. operate ms-office operations</li> <li>3. knowledge to work on simple projects laid on text and numerical data have experience on Notepad and Paint</li> <li>4. gain practical exposure on spreadsheet</li> <li>5. have practical skill on power point presentation gain practical knowledge on Internet</li> </ol>
9	B. Sc. AT II sem.	Basic Electronics II	<ol style="list-style-type: none"> <li>1. Demonstrate and explain electrical components, electrical circuits and DC network theorems</li> <li>2. to understand the working of various Electronic circuits. The students will understand how to use the basic test and measuring instruments to test the circuits.</li> </ol>
10	B. Sc. AT II sem.	Workshop Technology II	<ol style="list-style-type: none"> <li>1. Students will be able to understand various types of Lathe machine and various types of operations</li> <li>2. Students will be able to understand about the various type of drill machine and operations</li> <li>3. Students will be able to handle and understand the various types of grinder tools and their work</li> <li>4. Students will be able to understand various types of Machine tool process and their operations</li> <li>5. Students will be able to understand CNC M/C tool process and their operations</li> </ol>
11	B. Sc. AT II sem.	Engg. Drawing II	<ol style="list-style-type: none"> <li>1. Students are able to use the drafting instruments properly and improve their lettering and dimensioning skills.</li> <li>2. Student's ability to perform basic sketching techniques will improve.</li> <li>3. Students will be able to perform basic Geometrical constructions, curves used in mechanical engineering practices.</li> <li>4. Student's ability to use architectural and engineering scales will increase.</li> <li>5. Students will be able to draw free hand sketching of multiple views from pictorial objects.</li> <li>6. Students are able to interpret and comprehend a sketch.</li> <li>7. Students are able to draw multiview orthographic and other projections including isometric, sectional, and perspective.</li> <li>8. Students will be able to extract information from drawings and geometric models to solve mechanical</li> </ol>

			<p>engineering problems.</p> <p>9. Students are able to draw the basic building drawings.</p> <p>10. Students will become familiar with drafting packages for mechanical engineering practice.</p>
12	B. Sc. AT II sem.	Engg. Material	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1. Define and classify various engineering materials.</li> <li>2. Identify and give various mechanical properties of materials.</li> <li>3. Classify various composites and use these composites for engineering applications read and interpret Iron-carbide diagrams.</li> <li>4. Understand and apply various heat treatment processes to steel.</li> <li>5. Give various non-mechanical properties of the material</li> </ol>
13	B. Sc. AT III sem.	Production Management	<ol style="list-style-type: none"> <li>1. understand the relationship between OM (operations management) and productivity explain the importance of and how to develop an operations strategy to achieve a competitive advantage describe how to achieve successful operations in a global environment understand how to manage resources to achieve superior quality through statistical process control</li> <li>2. understand the methods involved in forecasting demand explain how to design goods and services</li> <li>3. describe the three major process strategies and capacity planning understand how to develop location strategies</li> <li>4. review the importance of developing the proper layout strategy</li> <li>5. explain the relationship between a successful human resources strategy and job design principle</li> <li>6. review the principles of supply-chain management describe the methods involved in successful inventory management understand the methods involved in aggregate scheduling understand material requirements planning management</li> <li>7. Identify the principles involved in short-term scheduling explain and apply the principles of project</li> </ol>

			management 8. Describe the strategic importance of maintenance and reliability activities
14	B. Sc. AT III sem.	Mechanical Measurement	<ol style="list-style-type: none"> <li>1. Know the terms of the measurements, and Understand the principle of operation of an instrument, Choose Suitable measuring instruments for a particular application and Apply ethical principles while measuring dimensions.</li> <li>2. Appreciate Measurement of strain by using a basic strain gauge and hence verify the stress induced and application of transducers in mechanical engineering applications for sustainable development.</li> <li>3. Apply the principles of instrumentation for transducers &amp; measurement of non electrical parameters like temperature, pressure, flow, speed, force and stress in mechanical engineering applications for sustainable development.</li> <li>4. Apply the principles of miscellaneous measurements for humidity, density, level and blood pressure.</li> </ol>
15	B. Sc. AT III sem.	Machine Drawing 1	<ol style="list-style-type: none"> <li>1. Analysis of complex design systems related to mechanical Engineering.</li> <li>2. Making use of appropriate laboratory tools and designing innovative methods.</li> <li>3. To motivate students to develop new innovative methods for measuring product Characteristics.</li> <li>4. To enhance the ability of students to work as teams.</li> <li>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement</li> </ol>
16	B. Sc. AT III sem.	Introduction to Automobile engg.	<ol style="list-style-type: none"> <li>1. Students will be able to understand classification of various of Automobile</li> <li>2. Students will be able to understand about the various type Chassis construction and working and operations</li> <li>3. Students will be understand the various types of Automobile Technology</li> <li>4. Students will be understand various types Engine specification and Measurements</li> </ol>
17	B. Sc. AT III sem.	Engine 1	<ol style="list-style-type: none"> <li>1. Students will be able to understand classification of various of IC and EC Engines types of operations</li> <li>2. Students will be able to understand about the various type engine construction and working and operations</li> </ol>



			<p>3. Students will be understand the various types two stroke and four stroke engine and their terminology</p> <p>4. Students will be understand various types Engine specification and Measurements</p> <p>5. Students will be understand Various types of automobile fuel and properties of fuel</p>
18	B. Sc. AT III sem.	Transmission System 1	<p>1. Utilize appropriate safety procedures, perform general transmission and transaxle diagnosis.</p> <p>2. Perform automatic transmission and transaxle maintenance and adjustments.</p> <p>3. Perform in-vehicle and off-vehicle automatic transmission and transaxle repair.</p> <p>4. Properly and safely use and maintain tools and equipment related to automatic transmission service and repair.</p> <p>5. Explain the basic gear design, gear combination, gear ratios, and torque multiplication.</p>
19	B. Sc. AT IV sem.	Industrial Organisation and Management	<p>This course in applied microeconomics is concerned with the behavior and performance of firms in markets, with a particular focus on strategic interactions. It goes beyond the perfectly competitive model by considering the nature of market power and how that affects firm behaviour and subsequently consumers and policy-makers. Topics covered may include theories of monopoly, price discrimination, oligopoly, auctions, vertical and horizontal integration, economies of scale and scope, network externalities, and regulation.</p>
20	B. Sc. AT IV sem.	Electrical Technology	<p>On completion of the course students will be able to</p> <p>1. Predict the behavior of any electrical and magnetic circuits.</p> <p>2. Formulate and solve complex AC, Dc circuits.</p> <p>3. Identify the type of electrical machine used for that particular application.</p> <p>4. Realize the requirement of transformers in transmission and distribution of electric power and other applications.</p> <p>5. Function on multi-disciplinary teams.</p>
21	B. Sc. AT IV sem.	Machine Drawing II	<p>1. Analysis of complex design systems related to mechanical Engineering.</p> <p>2. Making use of appropriate laboratory tools and designing innovative methods.</p> <p>3. To motivate students to develop new innovative methods for measuring product Characteristics.</p>

			<p>4. To enhance the ability of students to work as teams.</p> <p>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement</p>
22	B. Sc. AT IV sem.	Automobile Tool II	<p>1. Students will be able to understand various types of General Tools</p> <p>2. Students will be able to understand about the various type of Special purpose Tools</p> <p>3. Students will be understand the various types Machinery Tools</p> <p>4. Students will be understand various types of Hand Tools</p> <p>5. Students will understand various types of Machinery.</p>
23	B. Sc. AT IV sem.	Engine II	<p>1. Students will be able to understand various types of fuel supply on SI engine</p> <p>2. Students will be able to understand about the various type of fuel supply system on CI engine</p> <p>3. Students will be understand the various types Lubrication system and their construction and working</p> <p>4. Students will be understand various types cooling system and construction and working</p> <p>5. Students will be understand Various types ignition system and their operation</p> <p>6. Students will be understand Various types air pollution and standard noms</p>
24	B. Sc. AT IV sem.	Transmission System II	<p>1. Utilize appropriate safety procedures, perform general transmission and transaxle diagnosis.</p> <p>2. Perform automatic transmission and transaxle maintenance and adjustments.</p> <p>3. Perform in-vehicle and off-vehicle automatic transmission and transaxle repair.</p> <p>4. Properly and safely use and maintain tools and equipment related to automatic transmission service and repair.</p> <p>5. Explain the basic gear design, gear combination, gear ratios, and torque multiplication.</p>
25	B. Sc. AT V sem.	EDP I	<p>1. understand the nature of entrepreneurship</p> <p>2. understand the function of the entrepreneur in the successful, commercial application of innovations</p> <p>3. confirm an entrepreneurial business idea</p>

			<p>4. identify personal attributes that enable best use of entrepreneurial opportunities</p> <p>5. explore entrepreneurial leadership and management style.</p>
26	B. Sc. AT V sem.	Automobile Trouble Maint. & Testing I	<p>1. Students will be understand various Troubles of cooling system</p> <p>2. Students will be understand various Troubles of Ignition system</p> <p>3. Students will be understand various Troubles of Braking system</p> <p>4. Students will be understand various Troubles of starting system</p> <p>5. Students will be understand various Troubles of steering System</p> <p>6. Students will be understand various Troubles of Engine system</p>
27	B. Sc. AT V sem.	Automobile Electrical and electronics system I	<p>1. Students will be able to understand various types Battery requirements of battery</p> <p>2.) Students will be able to understand about the various Battery charging system and construction working</p> <p>3. Students will be understand the various types electrical symbol, wiring system</p> <p>4. Students will be understand the various types Headlight system, instrument panel,</p> <p>5. Students will be understand the various types fuse, and switch</p>
28	B. Sc. AT V sem.	Mechatronics I	<p>Identification of key elements of mechatronics system and its representation in terms of block diagram</p> <p>1. Understanding the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O</p> <p>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller</p> <p>3. Time and Frequency domain analysis of system model (for control application)</p> <p>4. PID control implementation on real time systems</p> <p>5. Development of PLC ladder programming and implementation of real life systems.</p>
29	B. Sc. AT V sem.	Body Chassis Maintenance	<p>1 Describe the concept of car body design, passenger safety, crumple zone and crash testing.</p> <p>2 Identify the concepts of wind tunnel testing and vehicle body optimization techniques to reduce drag.</p>

			<p>3 Classify the various types of bus body construction, seating layout, regulations and comfort.</p> <p>4 Describe the various heavy vehicle bodies, driver's visibility and cabin design.</p> <p>5 Explain the various types of materials and painting techniques for vehicle body</p>
30	B. Sc. AT V sem.	Transport management	<p>1. Students will be able to importance of transport management</p> <p>2. Students will be able to types of road and traffic condition</p> <p>3. Students will be able to Bus transport organization function and various operations</p> <p>4. Students will be able to various types of good transport and operation</p> <p>. Students will be able to various types transport operation and scope of transport industry</p>
31	B. Sc. AT VI sem.	EDP II	<p>Develop idea generation, creative and innovative skills</p> <p>1. Aware of different opportunities and successful growth stories</p> <p>2. Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business.</p> <p>3. Understand the entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.</p> <p>4. Run a small enterprise with small capital for a short period and experience the science and art of doing business.</p>
32	B. Sc. AT VI sem.	Automobile Trouble Maint. & Testing II	<p>1. Students will be understand various Troubles of Clutch system</p> <p>2. Students will be understand various Troubles of Gear system</p> <p>3. Students will be understand various Troubles of Steering system</p> <p>4. Students will be understand various Troubles of Suspension system</p> <p>5. Students will be understand various Troubles of Drive line System</p> <p>6. Students will be understand various Troubles of Vehicle system</p>
33	B. Sc. AT	Automobile	<p>1. Students will be able to understand various types</p>

	VI sem.	Electrical and electronics system II	<p>of electrical accessories of automobile vehicle</p> <ol style="list-style-type: none"> <li>2. Students will be able to understand about the windshield wiper system, various types of Horns, and gauges construction working</li> <li>3. Students will be understand the CDI Ignition system and construction and working</li> <li>4. Students will be understand the various types of Starting system of engine</li> <li>5. Students will be understand the various types fuse, and switch</li> </ol>
34	B. Sc. AT VI sem.	Mechatronics II	<p>Identification of key elements of mechatronics system and its representation in terms of block diagram</p> <ol style="list-style-type: none"> <li>1. Understanding the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O</li> <li>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller</li> <li>3. Time and Frequency domain analysis of system model (for control application)</li> <li>4. PID control implementation on real time systems</li> </ol>
35	B. Sc. AT VI sem.	Autocad	<ol style="list-style-type: none"> <li>1. Demonstrate basic concepts of the AutoCAD software</li> <li>2. Apply basic concepts to develop construction (drawing) techniques</li> <li>3. Ability to manipulate drawings through editing and plotting techniques</li> <li>4. Understand geometric construction</li> <li>5. Produce template drawings</li> <li>6. Produce 2D Orthographic Projections</li> <li>7. Understand and demonstrate dimensioning concepts and techniques</li> <li>8. Understand Section and Auxiliary Views</li> <li>9. Become familiar with the use of Blocks, Design Center, and Tool Palettes</li> <li>10. Become familiar with Solid Modeling concepts and techniques.</li> </ol>
36	B. Sc. AT VI sem.	Vehicle Rule	<ol style="list-style-type: none"> <li>1. Students know what traffic is.</li> <li>2. Students know that traffic can hurt me.</li> <li>3. Students know I must be careful on the road.</li> <li>4. Students can help to be safe on the road.</li> <li>5. There are other people who can help me be safe on the road.</li> </ol>

			<p>6.Students know that walking is good for me and the environment.</p> <p>7.Students know the different parts of the road and how to behave on each.</p>
1	B. Sc. WT I sem.	Communication skills I	<p>1. Students will be able to improve their Listening Skills.</p> <p>2. Students will be able to improve their reading comprehension.</p> <p>3. Students will be able to participate in group discussion.</p> <p>4. Students will be able to know the interview techniques.</p>
2	B. Sc. WT I sem.	Computer Technique I	<p>1. Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming</p> <p>2. Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet</p> <p>3. Understand binary, hexadecimal and octal number systems and their arithmetic.</p> <p>4. Understand how logic circuits and Boolean algebra forms as the basics of digital computers.</p>
3	B. Sc. WT I sem.	Basic Electronics I	<p>1.Demonstrate and explain electrical components, electrical circuits and DC network theorems</p> <p>2.to understand the working of various Electronic circuits. The students will u understand how to use the basic test and measuring instruments to test the circuits.</p>
4	B. Sc. WT I sem.	Workshop Technology I	<p>1. Students will be understand various types of safety and how to get precaution on workplace</p> <p>2. Students will be to improve of various working method and bench work practices</p> <p>3. Students will be handle and understand the various types of hand tools and their work</p> <p>4. Students will be understand various types of manufacturing process and there material requirement</p>
5	B. Sc. WT I sem.	Engg. Drawing I	<p>1. Students are able to use the drafting instruments properly and improve their lettering and dimensioning skills.</p> <p>2. Student's ability to perform basic sketching</p>

			<p>techniques will improve.</p> <p>3. Students will be able to perform basic Geometrical constructions, curves used in mechanical engineering practices.</p> <p>4. Student's ability to use architectural and engineering scales will increase.</p> <p>5. Students will be able to draw free hand sketching of multiple views from pictorial objects.</p> <p>6. Students are able to interpret and comprehend a sketch.</p> <p>7. Students are able to draw multiview orthographic and other projections including isometric, sectional, and perspective.</p> <p>8. Students will be able to extract information from drawings and geometric models to solve mechanical engineering problems.</p> <p>9. Students are able to draw the basic building drawings.</p> <p>10. Students will become familiar with drafting packages for mechanical engineering practice.</p>
6	B. Sc. WT I sem.	Fundamental of Mechanical Engg.	<p>At the end of the course student will be able to:</p> <p>1. Explain the basic terminology of mechanical engineering.</p> <p>2. Differentiate between various forms of energy.</p> <p>3. Understand and apply various laws of thermodynamics.</p> <p>4. Understand the ideal gas equation and its application to various thermodynamic processes.</p> <p>5. Understand properties of steam which is used as a working substance in thermal power plants.</p> <p>6. Understand various basics of fuels and its combustion.</p> <p>7. Understand and explain various mechanical energy converting devices.</p> <p>8. Suggest some alternative renewable energy sources for green energy harnessing.</p>
7	B. Sc. WT II sem.	Communication skills II	<p>1. Students will be able to improve their Listening Skills.</p> <p>2. Students will be able to improve their reading comprehension.</p> <p>3. Students will be able to participate in group discussion.</p> <p>4. Students will be able to know the interview techniques.</p>
8	B. Sc. WT II	Computer	<p>1. exhibit improved understanding of computer</p>

	sem.	Technique II	<p>operations</p> <ol style="list-style-type: none"> <li>2. operate ms-office operations</li> <li>3. knowledge to work on simple projects laid on text and numerical data have experience on Notepad and Paint</li> <li>4. gain practical exposure on spreadsheet</li> <li>5. have practical skill on power point presentation gain practical knowledge on Internet</li> </ol>
9	B. Sc. WT II sem.	Basic Electronics II	<ol style="list-style-type: none"> <li>1. Demonstrate and explain electrical components, electrical circuits and DC network theorems</li> <li>2. to understand the working of various Electronic circuits. The students will understand how to use the basic test and measuring instruments to test the circuits.</li> </ol>
10	B. Sc. WT II sem.	Workshop Technology II	<ol style="list-style-type: none"> <li>1. Students will be able to understand various types of Lathe machine and various types of operations</li> <li>2. Students will be able to understand about the various type of drill machine and operations</li> <li>3. Students will be able to handle and understand the various types of grinder tools and their work</li> <li>4. Students will be able to understand various types of Machine tool process and their operations</li> <li>5. Students will be able to understand CNC M/C tool process and their operations</li> </ol>
11	B. Sc. WT II sem.	Engg. Drawing II	<ol style="list-style-type: none"> <li>1. Students are able to use the drafting instruments properly and improve their lettering and dimensioning skills.</li> <li>2. Student's ability to perform basic sketching techniques will improve.</li> <li>3. Students will be able to perform basic Geometrical constructions, curves used in mechanical engineering practices.</li> <li>4. Student's ability to use architectural and engineering scales will increase.</li> <li>5. Students will be able to draw free hand sketching of multiple views from pictorial objects.</li> <li>6. Students are able to interpret and comprehend a sketch.</li> <li>7. Students are able to draw multiview orthographic and other projections including isometric, sectional, and perspective.</li> <li>8. Students will be able to extract information from drawings and geometric models to solve mechanical engineering problems.</li> <li>9. Students are able to draw the basic building</li> </ol>



			<p>drawings.</p> <p>10. Students will become familiar with drafting packages for mechanical engineering practice.</p>
12	B. Sc. WT II sem.	Engg. Material	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1. Define and classify various engineering materials.</li> <li>2. Identify and give various mechanical properties of materials.</li> <li>3. classify various composites and use these composites for engineering applications.</li> <li>4. read and interpret Iron-carbide diagrams.</li> <li>5. understand and apply various heat treatment processes to steel.</li> <li>6. Give various non-mechanical properties of the material.</li> </ol>
13	B. Sc. WT III sem.	Production Management	<ol style="list-style-type: none"> <li>1. understand the relationship between OM (operations management) and productivity explain the importance of and how to develop an operations strategy to achieve a competitive advantage describe how to achieve successful operations in a global environment understand how to manage resources to achieve superior quality through statistical process control</li> <li>2. understand the methods involved in forecasting demand explain how to design goods and services</li> <li>3. describe the three major process strategies and capacity planning understand how to develop location strategies</li> <li>4. review the importance of developing the proper layout strategy</li> <li>5. explain the relationship between a successful human resources strategy and job design principle</li> <li>6. review the principles of supply-chain management describe the methods involved in successful inventory management</li> <li>7. understand the methods involved in aggregate scheduling understand material requirements planning management</li> <li>8. identify the principles involved in short-term scheduling</li> <li>9. explain and apply the principles of project management</li> <li>10.) describe the strategic importance of</li> </ol>

			maintenance and reliability activities
14	B. Sc. WT III sem.	Mechanical Measurement	<ol style="list-style-type: none"> <li>1. Know the terms of the measurements, and Understand the principle of operation of an instrument, Choose Suitable measuring instruments for a particular application and Apply ethical principles while measuring dimensions.</li> <li>2. Appreciate Measurement of strain by using a basic strain gauge and hence verify the stress induced and application of transducers in mechanical engineering applications for sustainable development.</li> <li>3. Apply the principles of instrumentation for transducers &amp; measurement of non electrical parameters like temperature, pressure, flow, speed, force and stress in mechanical engineering applications for sustainable development.</li> <li>4. Apply the principles of miscellaneous measurements for humidity, density, level and blood pressure.</li> </ol>
15	B. Sc. WT III sem.	Machine Drawing I	<ol style="list-style-type: none"> <li>1. Analysis of complex design systems related to mechanical Engineering.</li> <li>2. Making use of appropriate laboratory tools and design innovative methods.</li> <li>3. To motivate students to develop new innovative methods for measuring product Characteristics.</li> <li>4. To enhance the ability of students to work as teams.</li> <li>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement</li> </ol>
16	B. Sc. WT III sem.	Applied Thermodynamic s	<p>At the end of the course students should be able to –</p> <ol style="list-style-type: none"> <li>1. Apply thermodynamic laws for analysis of thermal systems.</li> <li>2. Compare, select proper thermodynamic cycle for power conversion system under consideration.</li> <li>3. Understand constructional details of 2S, 4S, SI/CI IC engine, Select suitable IC engine for the application.</li> <li>4. Explain the need of inter cooling for a multi-stage compressor</li> <li>5. Justify merits of nonconventional energy sources over conventional energy sources.</li> </ol>
17	B. Sc. WT III sem.	Manufacturing Process I	<p>Students should be able to:</p> <ol style="list-style-type: none"> <li>1. General Introduction, Design for Manufacture, The Design Process, Selecting Materials and Manufacturing Process, Product quality,</li> </ol>

		<p>Manufacturing automation, Economics of Manufacture</p> <p>2. Understand the role of manufacturing processes and remember other courses.</p> <p>3. Get familiar with terms such as production, quality, automation, economist.</p> <p>4. Casting processes, Solidification of Metals, Cast Structures, Casting Alloys, Ingot Casting and Continuous Casting, Casting Processes, Expendable Mold, Permanent Mold, Processing of Casting and Casting Design Learn about casting processes.</p> <p>5. Be able to choose the best casting process for a specific product.</p> <p>6. Bulk deformation processes, Forging, Rolling, Cold and hot Extrusion, Rod, Wire and Tube Drawing, Die Manufacturing Methods, Die Failures, Learn about deformation processes.</p> <p>7. Be able to choose the best forming process for a specific product.</p> <p>8. Sheet-metal forming processes, Sheet-Metal Characteristics, Shearing, Bending of Sheet and Plate, Stretch Forming, Bulging, Deep-Drawing, Formability of Sheet Metals Learn about sheet-metal process.</p> <p>9. Understand in depth the sheet –metal processes and their formation mechanism.</p> <p>10. Material-Removal Processes (Milling, Turning), Mechanics of Chip Formation, Tool Wear, Surface Finish and Integrity, Cutting-Tool Materials, Cutting Fluids, Cutting Processes and Machine Tools for Producing Round Shapes, Machining Centers Learn about material removal processes.</p> <p>11. Understand the cutting parameters and working condition during cutting. Joining Processes, Ox fuel Gas Welding, Thermit Welding, Arc-Welding, Consumable and No consumable Electrode, Resistance Welding, Solid-State Welding, Electron-Beam Welding, Laser Beam Welding, The welded Joint</p> <p>12. Learn about joining processes. Be able to choose the proper process for different joining cases.</p> <p>13. Introduction to Integrated Manufacturing Systems, Manufacturing Systems, Computer, Integrated-Manufacturing, Computer-Aided-Design, Group Technology, Cellular manufacturing,</p>
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			Flexible manufacturing systems, Just-in-time production 14. Understand what integrated manufacturing systems are. Understand the role of computers and special software within a production.
18	B. Sc. WT III sem.	Machine Tool Technology	<ol style="list-style-type: none"> <li>1. Students will be understand various types of machines Tools</li> <li>2. Students will be understand various Types of Machines Parts</li> <li>3. Students will be understand Milling Machine, Lathe Machine Tools</li> <li>4. Students will be understand various Types CNC Machining Operations</li> <li>5. Students will be understand various Special Machine Tools</li> </ol>
19	B. Sc. WT IV sem.	Industrial Organization and Management	This course in applied microeconomics is concerned with the behavior and performance of firms in markets, with a particular focus on strategic interactions. It goes beyond the perfectly competitive model by considering the nature of market power and how that affects firm behavior and subsequently consumers and policy-makers. Topics covered may include theories of monopoly, price discrimination, oligopoly, auctions, vertical and horizontal integration, economies of scale and scope, network externalities, and regulation.
20	B. Sc. WT IV sem.	Electrical Technology	<ol style="list-style-type: none"> <li>1. Understand the basic properties of electrical elements, and solve DC circuit analysis problems. DC network theorems.</li> <li>2. understand the fundamental behavior of AC circuits and solve circuit problems.</li> <li>3. Apply the knowledge gained to explain the behavior of the circuit at series &amp; parallel resonance of circuit &amp; the effect of resonance.</li> <li>4. Explain the basic properties of electromagnetic circuit &amp; their application.</li> </ol>

21	B. Sc. WT V sem.	Machine Drawing II	<ol style="list-style-type: none"> <li>1. Analysis of complex design systems related to mechanical Engineering.</li> <li>2. Making use of appropriate laboratory tools and designing innovative methods.</li> <li>3. To motivate students to develop new innovative methods for measuring product Characteristics.</li> <li>4. To enhance the ability of students to work as teams.</li> <li>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement</li> </ol>
22	B. Sc. WT IV sem.	Heat Transfer	<p>At the end of the course student shall be able to</p> <ol style="list-style-type: none"> <li>1. Understand the application and importance of heat transfer in general as well industrial life.</li> <li>2. Understand different modes of heat transfer. understand the working of different types of heat exchanger.</li> <li>3. explain the mechanism of boiling and condensation.</li> <li>understand the mechanism of mass transfer</li> </ol>
23	B. Sc. WT IV sem.	Manufacturing Process II	<p>Upon completion of this course the student will be able to:</p> <ol style="list-style-type: none"> <li>1. select appropriate processes for manufacturing industrial products;</li> <li>2. identify routings of the operations and equipment involved in changing raw materials into useful products;</li> <li>3. propose the integration of appropriate processes in a proper sequence to manufacture an economical product;</li> </ol>
24	B. Sc. WT IV sem.	Strength of material	<ol style="list-style-type: none"> <li>1. Students who successfully complete this course will have demonstrated an ability to:</li> <li>2. Understand the concepts of stress and strain at a point as well as the stress-strain relationships for homogenous, isotropic materials.</li> <li>3. Calculate the stresses and strains in axially-loaded members, circular torsion members, and members subject to flexural loadings.</li> <li>4. Calculate the stresses and strains associated with thin-wall spherical and cylindrical pressure vessels.</li> <li>5. Determine the stresses and strains in members subjected to combined loading and apply the theories of failure for static loading.</li> <li>6. Determine and illustrate principal stresses, maximum shearing stress, and the stresses acting on a structural member.</li> </ol>

			<p>7. Determine the deflections and rotations produced by the three fundamental types of loads: axial, torsion, and flexural.</p> <p>8. Analyze slender, long columns subjected to axial loads.</p> <p>9. Design simple bars, beams, and circular shafts for allowable stresses and loads.</p>
25	B. Sc. WT V sem.	EDP	<ol style="list-style-type: none"> <li>1. understand the nature of entrepreneurship</li> <li>2. understand the function of the entrepreneur in the successful, commercial application of innovations</li> <li>3. confirm an entrepreneurial business idea</li> <li>4. identify personal attributes that enable best use of entrepreneurial opportunities</li> <li>5. explore entrepreneurial leadership and management style.</li> </ol>
26	B. Sc. WT V sem.	Robotics I	<ol style="list-style-type: none"> <li>1. Design mechanical structure of a robot.</li> <li>2. Understand the robot configuration and sub-systems</li> <li>3. Interface different components of the robot with a microcontroller.</li> <li>4. Understand principle of robot programming.</li> <li>5. Design different types of robots for different purposes.</li> </ol>
27	B. Sc. WT V sem.	Tool Engg.	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand geometry of single and multi point cutting tools.</li> <li>2. Give nomenclature of cutting tools.</li> <li>3. Select proper cutting tools for material removal operations.</li> <li>4. Design and develop jigs and fixtures for work pieces.</li> <li>5. Select proper work holding and locating devices for the work piece.</li> </ol>
28	B. Sc. WT V sem.	Computer Integrated Manufacturing	<p>The students will be able to:</p> <ol style="list-style-type: none"> <li>1. Solve the design problems of different types of transfer mechanisms.</li> <li>2. Perform design and analysis of automatic storage and retrieval systems.</li> <li>3. Evaluate the space requirements of different storage systems.</li> <li>4. Design the workstation requirement for unattended operations and automated production system.</li> <li>5. Optimize the number of machines required for a machine cell in a given production system.</li> </ol>

29	B. Sc. WT V sem.	Quality Engg. & Industrial Management	<ol style="list-style-type: none"> <li>1. Students must be Understand the Operation of Industry</li> <li>2. Students must be Understand the Management of Industry</li> <li>3. Students must be Understand the Quality of Industrial Products</li> <li>4. Students must be Understand the process of Industry</li> <li>5. Students must be Understand the Different departmental activities of Industry</li> </ol>
30	B. Sc. WT V sem.	Mechatronics	<p>Identification of key elements of mechatronics system and its representation in terms of block diagram</p> <ol style="list-style-type: none"> <li>1. Understanding the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O</li> <li>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller</li> <li>3. Time and Frequency domain analysis of system model (for control application)</li> <li>4. PID control implementation on real time systems</li> </ol>
31	B. Sc. WT VI sem.	EDP II	<p>Develop idea generation, creative and innovative skills</p> <ol style="list-style-type: none"> <li>1. Aware of different opportunities and successful growth stories</li> <li>2. Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business.</li> <li>3. Understand the entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.</li> <li>4. Run a small enterprise with small capital for a short period and experience the science and art of doing business.</li> </ol>
32	B. Sc. WT VI sem.	Robotics II	<ol style="list-style-type: none"> <li>1. Design mechanical structure of a robot.</li> <li>2. Understand the robot configuration and sub-systems</li> <li>3. Interface different components of the robot with a microcontroller.</li> <li>4. Understand principle of robot programming.</li> <li>5. Design different types of robots for different purposes.</li> </ol>
33	B. Sc. WT VI sem.	Industrial hyd. & Pneumatics	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic properties of the fluids and</li> </ol>

			<p>their significance.</p> <p>2. Have brief knowledge about the working of turbines and pumps.</p> <p>3. Select and employ correct valves as per the requirement of the system.</p> <p>4. Select proper components for the pneumatic system.</p> <p>5. Draw and interpret the hydraulic and pneumatic circuit diagram.</p>
34	B. Sc. WT VI sem.	Mechatronics II	<p>Identification of key elements of mechatronics system and its representation in terms of block diagram</p> <p>1. Understanding the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O</p> <p>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller</p> <p>3. Time and Frequency domain analysis of system model (for control application)</p> <p>4. PID control implementation on real time systems</p>
35	B. Sc. WT VI sem.	Autocad	<p>1. Demonstrate basic concepts of the AutoCAD software</p> <p>2. Apply basic concepts to develop construction (drawing) techniques</p> <p>3. Ability to manipulate drawings through editing and plotting techniques</p> <p>4. Understand geometric construction</p> <p>5. Produce template drawings</p> <p>6. Produce 2D Orthographic Projections</p> <p>7. Understand and demonstrate dimensioning concepts and techniques</p> <p>8. Understand Section and Auxiliary Views</p> <p>9. Become familiar with the use of Blocks, Design Center, and Tool Palettes</p> <p>10. Become familiar with Solid Modeling concepts and techniques.</p>
36	B. Sc. WT VI sem.	Industrial Engg.	<p>1. Students must be Understand the Operation of Industry</p> <p>2. Students must be Understand the Process of Work study</p> <p>3. Students must be Understand the term of work measurements</p> <p>4. Students must be Understand the Work</p>



			measurements Techniques 5.Students must be Understand the Kaizen Techniques
1	B. Sc. RAC I sem.	Communication skills I	1.Students will be able to improve their Listening Skills. 2. Students will be able to improve their reading comprehension. 3. Students will be able to participate in group discussion. 4.Students will be able to know the interview techniques.
2	B. Sc. RAC I sem.	Computer Technique I	1. Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming 2. Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet 3. Understand binary, hexadecimal and octal number systems and their arithmetic. 4. Understand how logic circuits and Boolean algebra forms as the basics of digital computers.
3	B. Sc. RAC I sem.	Basic Electronics I	Students will able to 1.know of some basic electronic components and circuits. 2.understand working of some I C based circuits 3.working of some power electronic devices, transducers and application of transducers.
4	B. Sc. RAC I sem.	Workshop Technology I	1. Students will be understand various types of safety and how to get precaution on workplace 2. Students will be to improve of various working method and bench work practices 3. Students will be handle and understand the various types of hand tools and their work 4. Students will be understand various types of manufacturing process and there material requirement
5	B. Sc. RAC I sem.	Engg. Drawing I	1. Students are able to use the drafting instruments properly and improve their lettering and dimensioning skills. 2. Student's ability to perform basic sketching techniques will improve. 3. Students will be able to perform basic

			<p>Geometrical constructions, curves used in mechanical engineering practices.</p> <p>4. Student's ability to use architectural and engineering scales will increase.</p> <p>5. Students will be able to draw free hand sketching of multiple views from pictorial objects.</p> <p>6. Students are able to interpret and comprehend a sketch.</p> <p>7. Students are able to draw multiview orthographic and other projections including isometric, sectional, and perspective.</p> <p>8. Students will be able to extract information from drawings and geometric models to solve mechanical engineering problems.</p> <p>9. Students are able to draw the basic building drawings.</p> <p>10. Students will become familiar with drafting packages for mechanical engineering practice.</p>
6	B. Sc. RAC I sem.	Fundamental of Mechanical Engg.	<p>Explain the basic terminology of mechanical engineering.</p> <p>1. Differentiate between various forms of energy.</p> <p>2. Understand and apply various laws of thermodynamics.</p> <p>3. Understand the ideal gas equation and its application to various thermodynamic processes.</p> <p>4. Understand properties of steam which is used as a working substance in thermal power plants.</p> <p>5. Understand various basics of fuels and its combustion.</p> <p>6. Understand and explain various mechanical energy converting devices.</p> <p>7. Suggest some alternative renewable energy sources for green energy harnessing.</p>
7	B. Sc. RAC II sem.	Communication skills II	<p>1. Students will be able to improve their Listening Skills.</p> <p>2. Students will be able to improve their reading comprehension.</p> <p>3. Students will be able to participate in group discussion.</p> <p>4. Students will be able to know the interview techniques.</p>
8	B. Sc. RAC II sem.	Computer Technique II	<p>1. exhibit improved understanding of computer operations</p> <p>2. operate ms-office operations</p> <p>3. knowledge to work on simple projects laid on text and numerical data have experience on Notepad</p>

			<p>and Paint</p> <ol style="list-style-type: none"> <li>gain practical exposure on spreadsheet</li> <li>have practical skill on power point presentation</li> <li>gain practical knowledge on Internet</li> </ol>
9	B. Sc. RAC II sem.	Basic Electronics II	<ol style="list-style-type: none"> <li>Demonstrate and explain electrical components, electrical circuits and DC network theorems</li> <li>to understand the working of various Electronic circuits. The students will u understand how to use the basic test and measuring instruments to test the circuits.</li> </ol>
10	B. Sc. RAC II sem.	Workshop Technology II	<ol style="list-style-type: none"> <li>Students will be able to understand various types of Lathe machine and various types of operations</li> <li>Students will be able to understand about the various type of drill machine and operations</li> <li>Students will be handle and understand the various types of grinder tools and their work</li> <li>Students will be understand various types of Machine tool process and there operations</li> <li>Students will be understand CNC M/C tool process and there operations</li> </ol>
11	B. Sc. RAC II sem.	Engg. Drawing II	<ol style="list-style-type: none"> <li>Students are able to use the drafting instruments properly and improve their lettering and dimensioning skills.</li> <li>Student's ability to perform basic sketching techniques will improve.</li> <li>Students will be able to perform basic Geometrical constructions, curves used in mechanical engineering practices.</li> <li>Student's ability to use architectural and engineering scales will increase.</li> <li>Students will be able to draw free hand sketching of multiple views from pictorial objects.</li> <li>Students are able to interpret and comprehend a sketch.</li> <li>Students are able to draw multiview orthographic and other projections including isometric, sectional, and perspective.</li> <li>Students will be able to extract information from drawings and geometric models to solve mechanical engineering problems.</li> <li>Students are able to draw the basic building drawings.</li> <li>Students will become familiar with drafting packages for mechanical engineering practice.</li> </ol>
12	B. Sc. RAC	Engg. Material	At the end of the course student will be able to:

	II sem.		<ol style="list-style-type: none"> <li>1. Define and classify various engineering materials.</li> <li>2. Identify and give various mechanical properties of materials.</li> <li>3. classify various composites and use these composites for engineering applications.</li> <li>4. read and interpret the Iron-carbide diagram.</li> <li>5. understand and apply various heat treatment processes to steel.</li> <li>6. Give various non-mechanical properties of the material</li> </ol>
13	B. Sc. RAC III sem.	Production Management	<ol style="list-style-type: none"> <li>1. understand the relationship between OM (operations management) and productivity explain the importance of and how to develop an operations strategy to achieve a competitive advantage describe how to achieve successful operations in a global environment understand how to manage resources to achieve superior quality through statistical process control</li> <li>2. understand the methods involved in forecasting demand explain how to design goods and services</li> <li>3. describe the three major process strategies and capacity planning understand how to develop location strategies</li> <li>4. review the importance of developing the proper layout strategy</li> <li>5. explain the relationship between a successful human resources strategy and job design principle</li> <li>6. review the principles of supply-chain management describe the methods involved in successful inventory management understand the methods involved in aggregate scheduling understand material requirements planning management</li> <li>7. Identify the principles involved in short-term scheduling explain and apply the principles of project management</li> <li>8. Describe the strategic importance of maintenance and reliability activities</li> </ol>
14	B. Sc. RAC III sem.	Mechanical Measurement	<ol style="list-style-type: none"> <li>1. Know the terms of the measurements, and Understand the principle of operation of an instrument, Choose Suitable measuring instruments for a particular application and Apply ethical principles while measuring dimensions.</li> <li>2. Appreciate Measurement of strain by using a basic strain gauge and hence verify the stress induced and application of transducers in mechanical engineering applications for sustainable</li> </ol>

			<p>development.</p> <ol style="list-style-type: none"> <li>3. Apply the principles of instrumentation for transducers &amp; measurement of non electrical parameters like temperature, pressure, flow, speed, force and stress in mechanical engineering applications for sustainable development.</li> <li>4. Apply the principles of miscellaneous measurements for humidity, density, level and blood pressure.</li> </ol>
15	B. Sc. RAC III sem.	Machine Drawing I	<ol style="list-style-type: none"> <li>1. Analysis of complex design systems related to mechanical Engineering.</li> <li>2. Making use of appropriate laboratory tools and designing innovative methods.</li> <li>3. To motivate students to develop new innovative methods for measuring product Characteristics.</li> <li>4. To enhance the ability of students to work as teams.</li> <li>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement</li> </ol>
16	B. Sc. RAC III sem.	Applied Thermodynamic s	<p>At the end of the course students should be able to –</p> <ol style="list-style-type: none"> <li>1. Apply thermodynamic laws for analysis of thermal systems.</li> <li>2. Compare, select proper thermodynamic cycle for power conversion system under consideration.</li> <li>3. Understand constructional details of 2S, 4S, SI/CI IC engine, Select suitable IC engine for the application.</li> <li>4. Explain the need of inter cooling for a multi-stage compressor</li> <li>5. Justify merits of nonconventional energy sources over conventional energy sources.</li> </ol>
17	B. Sc. RAC III sem.	Hydraulics & Machines	<ol style="list-style-type: none"> <li>1. Students will be able to develop to gain basic knowledge on Fluid Statistics, Fluid Dynamics, closed conduit flows, hydro-electric power stations.</li> <li>2. Students will be able to design various components of pumps and turbines and study their characteristics.</li> </ol>
18	B. Sc. RAC III sem.	Air Conditioning System	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1. Apply thermodynamics to develop concepts for the psychometric.</li> <li>2. Understand and apply various psychometric processes for air conditioning purposes.</li> <li>3. Specify and calculate various parameters on a</li> </ol>

			<p>psychometric chart.</p> <p>4. Calculate and specify various cooling and heating load calculations.</p> <p>5. Develop brief understanding about the different air conditioning systems and their suitable applications.</p>
19	B. Sc. RAC IV sem.	Industrial Organization and Management	<p>This course in applied microeconomics is concerned with the behavior and performance of firms in markets, with a particular focus on strategic interactions. It goes beyond the perfectly competitive model by considering the nature of market power and how that affects firm behavior and subsequently consumers and policy-makers. Topics covered may include theories of monopoly, price discrimination, oligopoly, auctions, vertical and horizontal integration, economies of scale and scope, network externalities, and regulation.</p>
20	B. Sc. RAC IV sem.	Electrical Technology	<p>1. Understand the basic properties of electrical elements, and solve DC circuit analysis Problems. DC network theorems.</p> <p>2. Understand the fundamental behavior of AC circuits and solve circuit problems.</p> <p>3. Apply the knowledge gained to explain the behavior of the circuit at series &amp; parallel resonance of circuit &amp; the effect of resonance.</p> <p>4. Explain the basic properties of electromagnetic circuit &amp; their application.</p>
21	B. Sc. RAC IV sem.	Machine Drawing II	<p>1. Analysis of complex design systems related to mechanical Engineering.</p> <p>2. Making use of appropriate laboratory tools and designing innovative methods.</p> <p>3. To motivate students to develop new innovative methods for measuring product Characteristics.</p> <p>4. To enhance the ability of students to work as teams.</p> <p>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement</p>
22	B. Sc. RAC IV sem.	Refrigeration system	<p>At the end of the course student will be able to:</p> <p>1. Understand and explain CoP and tonnage of refrigeration systems.</p> <p>2. Arrange the various components of simple VCC in proper sequence.</p> <p>3. Justify the need for a multi pressure system.</p>

			<p>4. Explain the working and need of various components of the refrigeration system.</p> <p>5. Explain various types of air refrigeration cycles and their applicability.</p>
23	B. Sc. RAC IV sem.	Refrigeration Equipment	<p>After studying this unit, you should be able to</p> <ol style="list-style-type: none"> <li>1. Describe various types of compressor &amp; its working operations</li> <li>2. Describe various types of condenser &amp; its working operations</li> <li>3. Describe various types of evaporator &amp; its working operations</li> <li>4. Describe various types of expansion device &amp; its working operations</li> </ol>
24	B. Sc. RAC IV sem.	Air Conditioning equipment	<p>After completion of the course there will be considerable scope for the students in the reputed cooling industries across the country as the skilled HVAC technicians are not sufficiently available in the market. Due to the growing demand for cooling, the opportunity for self-employment is significantly high in this field, especially for the maintenance work.</p>
25	B. Sc. RAC V sem.	EDP	<ol style="list-style-type: none"> <li>1. Understand the nature of entrepreneurship</li> <li>2. Understand the function of the entrepreneur in the successful, commercial application of innovations</li> <li>3. Confirm an entrepreneurial business idea</li> <li>4. Identify personal attributes that enable best use of entrepreneurial opportunities</li> <li>5. Explore entrepreneurial leadership and management style.</li> </ol>
26	B. Sc. RAC V sem.	Refrigerants	<ol style="list-style-type: none"> <li>1. Illustrate the fundamental principles and applications of refrigeration and air conditioning system</li> <li>2. Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration systems</li> <li>3. Present the properties, applications and environmental issues of different refrigerants</li> <li>4. Calculate cooling load for air conditioning systems used for various</li> <li>5. Operate and analyze the refrigeration and air conditioning systems.</li> </ol>

27	B. Sc. RAC V sem.	Refrigeration & Air Conditioning material	<ol style="list-style-type: none"> <li>1. Know the concept, properties and types of insulating materials</li> <li>2. Understand different cable and wiring used in the refrigerator and air conditioning system</li> <li>3. Apply the knowledge of different material used in the components of refrigerator and air conditioning system</li> <li>4. understand lubrication system used in the refrigerator and air conditioning system</li> <li>5. Understand tubing material used in the refrigerator and air conditioning system.</li> </ol>
28	B. Sc. RAC V sem.	Refrigeration & Air Conditioning Application	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1. Select and apply a proper RAC system among various as per the requirements.</li> <li>2. Understand the requirements of food preservation and its various parameters.</li> <li>3. Understand the requirements of industry.</li> <li>4. Develop certain commercial applications.</li> <li>5. Work in a small ice plant.</li> <li>6. Develop refrigeration and air conditioning system for the transportation purpose.</li> </ol>
29	B. Sc. RAC V sem.	Refrigeration & Air Conditioning piping system	<p>Students will demonstrate an understanding thermal comfort conditions with respect to</p> <ol style="list-style-type: none"> <li>1. Temperature and humidity and human clothing and activities and its impact on human comfort, productivity, and health.</li> <li>2. Develop understanding of the principles and practice and requirements of ventilation.</li> <li>3. Students will demonstrate an understanding of the needs and requirements for ventilation and its impact on design and energy and its impact on human comfort, productivity, and health.</li> </ol>
30	B. Sc. RAC V sem.	Non conventional Refrigeration system	<ol style="list-style-type: none"> <li>1. Describe the properties of refrigerants and evaluate performance of the actual vapour compression refrigeration systems.</li> <li>2. Evaluate the performance of compound vapour compression refrigeration systems for various applications.</li> <li>3. Describe vapour absorption system for large cooling load application and evaluate its performance.</li> <li>4. Explain working principles of non-conventional refrigeration systems and evaluate the performance of steam jet refrigeration system.</li> </ol>



			<p>5. Compute cooling/heating loads for designing air conditioning systems for residential and commercial building.</p> <p>6. Design the air duct systems for large commercial buildings.</p>
31	B. Sc. RAC VI sem.	EDP II	<p>Develop idea generation, creative and innovative skills</p> <ol style="list-style-type: none"> <li>1. Aware of different opportunities and successful growth stories</li> <li>2. Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business.</li> <li>3. Understand the entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.</li> <li>4. Run a small enterprise with small capital for a short period and experience the science and art of doing business.</li> </ol>
32	B. Sc. RAC VI sem.	Refrigeration & Air Conditioning Maintenance	<p>At the end of the course student will be able to:</p> <ol style="list-style-type: none"> <li>1 Handle the various tools required for maintenance of RAC systems.</li> <li>2. Prepare various pipe joints.</li> <li>3. Develop and acquire various servicing techniques.</li> <li>4. Handle installation of RAC systems.</li> <li>5. Find and correct common electrical faults in the RAC system.</li> <li>6. Undertake maintenance of a small domestic refrigerator and AC system.</li> </ol>
33	B. Sc. RAC VI sem.	Refrigeration & Air Conditioning Installation	<ol style="list-style-type: none"> <li>1. Illustrate the fundamental principles and applications of refrigeration and air conditioning system</li> <li>2. Obtain cooling capacity and coefficient of performance by conducting test on vapors compression refrigeration systems</li> <li>3. Present the properties, applications and environmental issues of different refrigerants</li> <li>4. Calculate cooling load for air conditioning systems used for various</li> <li>5. Operate and analyze the refrigeration and air conditioning systems</li> </ol>
34	B. Sc. RAC VI sem.	Refrigeration & Air Conditioning standard	<ol style="list-style-type: none"> <li>1. Students must be Understand the Standards</li> <li>2. Students must be Understand the Need of Standards</li> </ol>

			<p>3. Students must be Understand the Classification of Refrigeration and Air conditioning Standard</p> <p>4. Students must be Understand the National or International Standards</p> <p>5. Students must be Understand the use of International Standards</p> <p>6. Students must be Understand the Existing Standards Likes ISO,ICE,ECS</p> <p>7. Students must be Understand the Procedure of standards Development</p> <p>8. Students must be Understand the Different Level of Standards</p>
35	B. Sc. RAC VI sem.	Selection of equipment and assembly	<p>1. Able to dismantle and assemble hermetic compressor &amp; test performance. Selection of hermetic compressor for different appliances, starting methods, testing controls &amp; safety cut out used in sealed compressor.</p> <p>2. Servicing &amp; descaling of Condenser used in different appliances (internals &amp; externals)</p> <p>3. Fitting &amp; adjustment of drier, filter &amp; refrigerant control used in different refrigeration systems.</p> <p>4. Servicing of different evaporators used in different appliances.</p> <p>5. Recovery and Recycling of Refrigerant used, alternative of CFC, HFC re-cover, transfer &amp; handling of gas cylinders.</p> <p>6. Retrofit CFC/HFC machine with ozone friendly refrigerant.</p> <p>7. Packing thermal insulation material and preventing cooling leakage.</p> <p>8. Servicing and preventive maintenance of walk in cooler &amp; Reach in cabinet.</p> <p>9. Servicing and preventive maintenance of cold storage.</p> <p>10. Fault diagnosis, servicing, leak test, evacuation, gas charging, check magnetic clutch and wiring of Car A.C. Test performance.</p> <p>11. Servicing, dismantling, checking different parts, re-placing worn out parts, check lubrication system, Assembling &amp; checking performance of commercial compressors.</p> <p>12. Servicing of water cooled condensers</p> <p>13. Servicing of cooling tower and performance test.</p> <p>14. Service and maintenance of Ice plant/Candy</p>

36	B. Sc. RAC VI sem.	Refrigeration & Air Conditioning safety	<ol style="list-style-type: none"> <li>1. Students must be Understand the Safety</li> <li>2. Students must be Understand the Need of safety operations</li> <li>3. Students must be Understand the Classification of Refrigeration and Air conditioning Standard safety job</li> <li>4. Students must be Understand the safety of RAC engineers</li> <li>5. Students must be Understand injury and prcations RAC</li> </ol>
1	M.Sc. Cs I Sem	Advanced Java	After completion of this course students can write a good application using java. Students can appear for java certification examination. Student can also work on networking and web projects
2	M.Sc. Cs I Sem	Neural Network	Students will be able to: study learning and modeling of the algorithms of Neural Network.
3	M.Sc. Cs I Sem	Digital Signal Processing	<p>By the end of the course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Familiar with the most important methods in DSP, including digital filter design, transform-domain processing and importance of Signal Processors</li> <li>2. Select proper tools for analog-to-digital and digital-to-analog conversion. Also select proper tools for time domain and frequency domain implementation</li> <li>3. Design, implementation, analysis and comparison of digital filters for processing of discrete time signals</li> <li>4. Integrate computer-based tools for engineering applications</li> <li>5. Employ signal processing strategies at multidisciplinary team activities</li> </ol>
4	M.Sc. Cs I Sem	Advanced Operating System	<p>Students will able to:</p> <ol style="list-style-type: none"> <li>1. Describe the important computer system resources and the role of operating systems in their management policies and algorithms.</li> <li>2. Understand the process management policies and scheduling of processes by CPU</li> <li>3. Evaluate the requirement for process synchronization and coordination handled by operating system</li> <li>4. Describe and analyze the memory management and its allocation policies.</li> </ol>

			<p>5. Identify use and evaluate the storage management policies with respect to different storage management technologies.</p> <p>6. Identify the need to create the special purpose operating system.</p>
5	M.Sc. Cs II Sem	Data Structure and analysis of Algo.	This course provides an introduction to mathematical modeling of computational problems. It covers the common algorithms, algorithmic paradigms, and data structures used to solve these problems. The course emphasizes the relationship between algorithms and programming, and introduces basic performance measures and analysis techniques for these problems.
6	M.Sc. Cs II Sem	Advanced Neural Network & Fuzzy system	This course provides Modeling and deployment of the applications through Neural Networks, Fuzzy and Genetic algorithms.
7	M.Sc. Cs II Sem	Image Processing	<p>By the end of the course students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the process of image capturing</li> <li>2. learn different techniques employed for the enhancement of images</li> <li>3. learn different causes for image degradation and overview of image restoration techniques</li> <li>4. understand the need for image compression and to learn the spatial and frequency domain techniques of image compression</li> <li>5. learn different feature extraction techniques for image analysis and recognition</li> <li>6. understand the need for image transforms different types of image transforms and their properties</li> </ol>
8	M.Sc. Cs II Sem	Parallel Computing	The objective of this course is to make students aware of an entirely new paradigm of parallel programming and computing.
9	M.Sc. Cs III Sem	Java Network Programming	After completion of this course students can write a good network based application using java. Students can appear for java certification examination. Student can also work on networking and web projects
10	M.Sc. Cs III Sem	Advanced software Engg. & Tech	The Objective of this course is to learn object oriented Software engineering skills through UML.
11	M.Sc. Cs III Sem	Computer Vision	<p>By the end of the course, students will develop skills and knowledge to:</p> <ol style="list-style-type: none"> <li>1. Understand and master basic knowledge, theories</li> </ol>

			<p>and methods in image processing and computer vision.</p> <ol style="list-style-type: none"> <li>Identify, formulate and solve problems in image processing and computer vision.</li> <li>Apply theoretical knowledge to identify the novelty and practicality of proposed methods</li> <li>Design and develop practical and innovative image processing and computer vision applications or systems</li> </ol>
12	M.Sc. Cs III Sem	Elective I	<p>After completion of this course students will understand the different biometric systems. The main objective of this course is to study the basics and advanced development of biometrics.</p>
13	M.Sc. Cs IV Sem	Pattern Recognition	<p>At the end of this course, students will be able to:</p> <ol style="list-style-type: none"> <li>Explain and compare a variety of pattern classification, structural pattern recognition, and pattern classifier combination techniques.</li> <li>Summarize, analyze, and relate research in the pattern recognition area verbally and in writing.</li> <li>Apply performance evaluation methods for pattern recognition, and critique comparisons of techniques made in the research literature.</li> <li>Apply pattern recognition techniques to real-world problems such as document analysis and recognition.</li> <li>Implement simple pattern classifiers, classifier combinations, and structural pattern recognizers.</li> </ol>
14	M.Sc. Cs IV Sem	Major Project	<p>Students can create projects and good applications. They understand and practice how to work in a team. Group discussion will become a habit.</p>
15	M.Sc. Cs IV Sem	Elective I DSS & BI	<ol style="list-style-type: none"> <li>Describe intelligence systems and DSS methodologies and concepts</li> <li>Explain the characteristics, architectures, and development of data warehouses, data marts, and decision support systems</li> <li>Distinguish between Online Analytical Processing (OLAP) and Online Transaction Processing (OLTP), and identify the different types of OLAP</li> </ol>
16	M.Sc. Cs IV Sem	Seminar	<p>They can understand and learn new topics from current trends. They able to explain new concepts and can prepare documentation</p>
1	M.Sc. IT I Sem	OOPs Using C++	<p>Upon completion of this course, the students will be able to:</p> <ol style="list-style-type: none"> <li>Understand the difference between the top-down and bottom-up approach</li> </ol>

			<p>2. Apply the concepts of object-oriented programming</p> <p>3. Demonstrate the use of various OOPs concepts with the help of programs.</p> <p>4. Describe the concept of function overloading, operator overloading, and polymorphism.</p> <p>5. Develop software in the C++ programming language,</p>
2	M.Sc. IT I Sem	Computer system Architecture	The main objective of this course is to study the basic working and organization of various components of computer systems.
3	M.Sc. IT I Sem	Operating System	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>1. Describe the important computer system resources and the role of operating systems in their management policies and algorithms.</li> <li>2. Understand the process management policies and scheduling of processes by CPU</li> <li>3. Evaluate the requirement for process synchronization and coordination handled by operating system</li> <li>4. Describe and analyze the memory management and its allocation policies.</li> <li>5. Identify use and evaluate the storage management policies with respect to different storage management technologies.</li> <li>6. Identify the need to create the special purpose operating system.</li> </ol>
4	M.Sc. IT I Sem	RDBMS	<p>On completion of this course students will be able to</p> <ol style="list-style-type: none"> <li>1. Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS.</li> <li>2. Use an SQL interface of a multi-user <b>relational DBMS</b> package to create, secure, populate, maintain, and query a database.</li> </ol>
5	M.Sc. IT II Sem	Programming in Core java	After completion of this course students can write a good application using java. Students can appear for java certification examination. Student can also work on networking and web projects
6	M.Sc. IT II Sem	Software Engg. & Case Tools	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>1. Define various software application domains and remember different process models used in software development.</li> <li>2. Explain needs for software specifications also</li> </ol>

			<p>they can classify different types of software requirements and their gathering techniques.</p> <p>3. Convert the requirements model into the design model and demonstrate use of software and user interface design principles.</p> <p>4. Justify role of SDLC in Software Project Development and they can evaluate importance of Software Engineering in PLC</p> <p>5. Generate project schedule and can construct, design and develop network diagram for different</p>
7	M.Sc. IT II Sem	Data Structure & Algo.	<p>After completing this course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand structure and behavior of Algorithms</li> <li>2. Better scope to write effective programs</li> </ol>
8	M.Sc. IT II Sem	Computer network	<p>Students can understand computer networking. They can create a setup of a network, internet and proxy server.</p>
9	M.Sc. IT III Sem	Programming in advanced java	<p>After completion of this course student will be able to do -</p> <ol style="list-style-type: none"> <li>1. create a simple java application based on the java foundation.</li> <li>2. use of java forms and contents to create a user interface</li> <li>3. create and use variables and arrays</li> <li>4. create class, interface, packages</li> <li>5. Apply oops concept to create classes</li> <li>6. enhance the user interface by adding menus, status bar and toolbar.</li> </ol>
10	M.Sc. IT III Sem	Decision support system & Intelligent system	<ol style="list-style-type: none"> <li>1. Describe intelligence systems and DSS methodologies and concepts</li> <li>2. Explain the characteristics, architectures, and development of data warehouses, data marts, and decision support systems</li> <li>3. Distinguish between Online Analytical Processing (OLAP) and Online Transaction Processing (OLTP), and identify the different types of OLAP</li> </ol>
11	M.Sc. IT III Sem	Network Security	<p>The main objective of this course is to learn various techniques to secure information while traveling through different communication mediums</p>
12	M.Sc. IT III Sem	Elective I	<ol style="list-style-type: none"> <li>1. Describe intelligence systems and DSS methodologies and concepts</li> <li>2. Explain the characteristics, architectures, and development of data warehouses, data marts, and decision support systems</li> <li>3. Distinguish between Online Analytical Processing</li> </ol>

			(OLAP) and Online Transaction Processing (OLTP), and identify the different types of OLAP
13	M.Sc. IT IV Sem	VB.NET Technology	The student will be able to use <b>VB.Net</b> to build Windows applications using structured and object-based programming techniques. Students will be exposed to the following concepts and/or skills at an Introductory conceptual level: Design, formulate, and construct applications with <b>VB.NET</b>
14	M.Sc. IT IV Sem	Major Project	Students can create projects and good applications. They understand and practice how to work in a team. Group discussion will become a habit.
15	M.Sc. IT IV Sem	Elective II Biometrics	After completion of this course students will understand the different biometric systems. The main objective of this course is to study the basics and advanced development of biometrics.
16	M.Sc. IT IV Sem	Seminar	They can understand and learn new topics from current trends. They able to explain new concepts and can prepare documentation

  
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# Program Outcomes (POs)

## Department of Management Science (BCA)

- 1) It provides the students a wide range of managerial skills with leadership qualities.
- 2) Empowers students with entrepreneurial and decision making skills by providing an excellent academic environment inculcating values of discipline, dignity, dedication.
- 3) Demonstrates analytical skills and technological expertise.

## Department of Computer Science & IT (UG)

- 1) IT knowledge: Apply the knowledge of computer science to solve the complex problems.
- 2) Problem analysis: Identify & decompose problems into parts & compose solutions.
- 3) Design/development of solutions: Design solutions for complex problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4) Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex activities with an understanding of the limitations.
- 5) Environment and sustainability: Understand the impact of the professional solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 6) Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the practice.
- 7) Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 8) Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design

documentation, make effective presentations, and give and receive clear instructions.

- 9) Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 10) Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

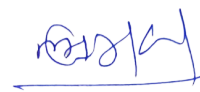
### **Department of Auto/ WT/ RAC**

- 1) Apply knowledge of science and engineering to arrive solutions.
- 2) Design a component, a process and a system to meet desired needs considering economic, environmental, social, ethical, health and safety, manufacturability and sustainability.
- 3) Conduct experiment, analyze and interpret data to arrive valid conclusions.
- 4) Use the techniques, skills, and modern engineering tools for modeling and prediction of problems by understanding the limitations.
- 5) Recognize the importance of health and safety, societal, cultural responsibility in the design and implementation of engineering projects.
- 6) Apply the standards and professional ethics in engineering practice.
- 7) Function effectively as a member or leader of a team.
- 8) Express effectively, comprehend and write reports on the engineering activities.
- 9) Apply engineering and management principles to manage projects in multidisciplinary environments.
- 10) Engage them in life-long learning by recognizing the need and technological changes

### **Department of Computer Science & IT (PG)**

- 1) IT knowledge: Apply the knowledge of computer science to solve the complex problems.

- 2) Problem analysis: Identify & decompose problems into parts & compose solutions.
- 3) Design/development of solutions: Design solutions for complex problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4) Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex activities with an understanding of the limitations.
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# **Program Specific Outcomes (PSOs)**

## **Department of Management Science (BCA)**

- 1) To provide a intellectual environment that fosters the search for new knowledge in a highly dynamic computing world through its quality education.
- 2) Develop manpower with leadership skills, moral values & attitude to accept global challenges.
- 3) Bachelor in computer applications (BCA) gives a number of opportunities to individuals to go ahead and shine in their lives.
- 4) A few of them being like software programmer, system and network administrator, web designer faculty for computer science and computer applications
- 5) get skill and info not only about computer and information technology but also in common, organization and management

## **Department of Computer Science & IT (UG)**

- 1) Demonstrate understanding of the principles and working of the hardware and software aspects of computer systems.
- 2) Design, implements, test, and evaluate a computer system, component, or algorithm to meet desired needs and to solve a computational Problem.
- 3) Gain knowledge in diverse areas of computer science and enhance the soft skill, life skill and emotional intelligence skill for career opportunities.


## **Department of Auto/ WT/ RAC**

- 1) Graduates will be successful engineers in the industry or in technical or professional careers.
- 2) Graduates will continue to constantly learn in the emerging technology and advanced field of study.

- 3) Gain knowledge in diverse areas of and enhance the soft skill, life skill and emotional intelligence skill for career opportunities.

### **Department of Computer Science & IT(PG)**

- 1) Demonstrate understanding of the principles and working of the hardware and software aspects of computer systems.
- 2) Design, implements, test, and evaluate a computer system, component, or algorithm to meet desired needs and to solve a computational Problem.
- 3) Gain knowledge in diverse areas of computer science and enhance the soft skill, life skill and emotional intelligence skill for career opportunities.

  
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