*G.S. Mandal's*

# Marathwada Institute of Technology, CIDCO Aurangabad

# Course Outcomes (COs)

## 2022-2023

# Course Outcomes (COs)

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

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| 4 | BCA I sem | Business Statistics | 1. Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data.<br>2. Calculate measures of central tendency, dispersion and asymmetry, correlation and regression analysis.<br>3. Choose a statistical method for solving practical problems<br>4. Highlight statistical relationships between variables in data sets<br>5. Predict values of strategic variables using regression and correlation analysis. |
| 5 | BCA I sem | Operating System | 1.Identify basic concepts, features and components of the operating **system**.<br>2.Understand and learn DOS commands<br>3.Correlate basic concepts of operating system with an existing operating system. |
| 6 | BCA I sem | Office Automation Tool | 1.To provide in-depth training in the use of office automation, internet and internet tools.<br>2.The course also helps the candidates to get acquainted with IT.<br>3. After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with the internet. |
| 7 | BCA II sem. | Accountancy II | Student will be able to:<br>1.Distinguish between Single Entry and Double Entry<br>2. Know the ascertainment of profit under the Single Entry system.<br>3. Understand the meaning and features of Non-Profit Organisations.<br>4. Learn to prepare Receipts & Payment Account, Income & Expenditure Account and Balance Sheet for Non-Profit Organizations.<br>5.Calculate the Goodwill. |
| 8 | BCA II sem. | Industrial Organization | 1.Student will able to understand Industrialization and problem of industrialization<br>2.Student will able to know the scale of operation and size of business<br>3.Student will able to understand the concept of concentration |
| 9 | BCA II sem. | Mathematics | 1. Find the inverse of a square matrix<br>2. Determine if a given matrix is diagonalizable |

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| | | | 3. Explain the concept of Logarithm and permutation and combination. |
| 10 | BCA II sem. | Programming in C | 1.Understanding a functional hierarchical code organization. Ability to define and manage data structures based on problem subject domain. .<br>2. Ability to handle possible errors during program execution |
| 11 | BCA II sem. | Principles of Management | 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.<br>2. Students will be able to understand the planning process in the organization.<br>3. Students will be able to understand the concept of organization.<br>4. Students will be able to demonstrate the ability to direct, leadership and communicate effectively.<br>5. Students will be able to analysis isolate issues and formulate best control methods. |
| 12 | BCA II sem. | UNIX operating System | On completion of this course the student should be able to:<br>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. |
| 13 | BCA III sem. | Principle of Management | 1. Recognize the role of a manager and how it relates to the organization's mission.<br>2. Define management, its four basic functions and skills.<br>3. Know critical management theories and philosophies and how to apply them.<br>4. Recognize the concept of social responsiveness and its benefits.<br>5. Explain the relationship between strategic, tactical, and<br>operational plans.<br>6. Identify the stages of team development and the skills a team must acquire to become effective.<br>7. Recognize the part communication plays in the management function.<br>8. Define change management and explain where it fits in the management function.<br>9. Explain the concept of continuous change and its impact on change management. |

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| 14 | BCA III sem. | OOPS Using C++ | On completion of this **course** the student should be able to: Program using objects and data abstraction, **class**, and methods in function abstraction. Analyze, write, debug, and test basic C++ codes using the approaches introduced in the **course**. 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:<br>1. Identify the elements of a contract.<br>2. Describe the Sell of goods Act.<br>3. Identify laws, conditions and regulations in national and international work environments. |
| 16 | BCA III sem. | DBMS | On completion of this **course** the student should be able to<br>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.<br>2. Develops an Entity-Relationship model based on user requirements. |
| 17 | BCA III sem. | E Business Essential | students will be able to:<br>1. Understand the fundamental and importance of E-commerce<br>2. Gain knowledge of different types in E-commerce: C2C, C2B, B2C, B2B, G2C<br>3. Analyze the impact of E-commerce on business models and strategy<br>4. Learn about the infrastructure for E-commerce<br>5. Learn the key features of Internet, Intranets, Extranets and web technology and how they relate to each other.<br>6. Know the legal issues and privacy in E-Commerce<br>7. Assess the electronic payment systems |
| 18 | BCA III sem. | Data Structure and algo. | Students will be able to:<br>1.Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms.<br>2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.<br>3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs |
| 19 | BCA IV sem. | Cost Accounting | students will be able to:<br>1.Understand various costing systems and management systems. |

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| | | | 2. Analyze and provide recommendations to improve the operations of organizations through the application of Cost and Management accounting techniques.<br>3. Evaluate the costs and benefits of different conventional and contemporary costing systems<br>4. Differentiate methods of schedule costs as per unit of production<br>5. Differentiate methods of calculating stock consumption<br>6. Identify the specifics of different costing methods |
| 20 | BCA IV sem. | JAVA | On completion of the course the student should be able to:<br>1.Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.<br>2. Read and make elementary modifications to Java programs that solve real-world problems. Validate input in a **Java** program. |
| 21 | BCA IV sem. | MIS & DSS | 1. Relate the basic concepts and technologies used in the field of management information systems;<br>2. Compare the processes of developing and implementing information systems.<br>3. Outline the role of the ethical, social, and security issues of information systems.<br>4. Translate the role of information systems in organizations, the strategic management processes, with the implications for the management.<br>5. Apply the understanding of how various information systems like DBMS work together to accomplish the information objectives of an organization.<br>6. Study the components of DSS and the main players who participate in the decision process |
| 22 | BCA IV sem. | B. Law - II | Demonstrate an understanding of the Legal Environment of Business.<br>1. Communicate effectively using standard business and legal terminology.<br>2. Demonstrate recognition of the requirements of the contract agreement<br>3. Demonstrate understanding of contract consideration and capacity<br>4. Demonstrate recognition of the genuineness of assent in contract formation.<br>5.Demonstrate understanding of legality and Statute of Frauds in contracts |

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| | | | 6.Identify contract remedies<br>7.Demonstrate recognition of transactions involving the Sales of Goods Act |
| 23 | BCA IV sem. | Entrepreneurship | 1. Understand the nature of entrepreneurship<br>2. Understand the function of the entrepreneur in the successful, commercial application of innovations.<br>3. Confirm an entrepreneurial business idea<br>4. Identify personal attributes that enable best use of entrepreneurial opportunities<br>5. Explore entrepreneurial leadership and management style. |
| 24 | BCA IV sem. | PC Maintenance | 1.Fundamentals of Hardware, handling, testing and troubleshooting of personal computer problems.<br>2.Diagnose & repair problems of Desktop/Laptop.<br>3.Identify existing configuration of the computer and peripherals and to troubleshoot common problems |
| 25 | BCA V sem. | Management Accounting | students will be able to:<br>1. Apply management accounting and its objectives in facilitating decision making.<br>2. Apply and analyze different types of activity-based management tools through the preparation of estimates.<br>3. Analyze cost-volume-profit techniques to determine optimal managerial decisions.<br>4. Apply management accounting and its objectives in facilitating decision making.<br>5. Apply and analyze different types of activity-based management tools through the preparation of estimates.<br>6. Prepare Cash Flow and Funds Flow statements this helps in planning for intermediate and long-term finances.<br>7. Calculate Ratios |
| 26 | BCA V sem. | SQL 2017 | the student should be able to:<br>1.Write complex SQL queries to retrieve information for business decision making from databases with many tables.<br>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 | 1.Students list the visual programming concepts.<br>2.Explain basic concepts and definitions.<br>3.Express constants and arithmetic operations. |

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| | | | 4.Distinguish variable and data types.<br>5.Students code visual programs by using Visual Basic work environment.<br>6.Distinguish and compose events and methods. |
| 28 | BCA V sem. | Organization Behavior | On completion of this course students will be able to analyze and compare different models used to explain individual behavior 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. | students will be able to:<br>1.Understand the process of software development.<br>2.The types of SE models and how to use them.<br>3.Understand different phases of SDLC.<br>4.Need of Documentation, Maintenance and testing. |
| 30 | BCA V sem. | Banking & Insurance | Students will be able to:<br>1.Understand the Concept of banks and risks faced by banks and ways to overcome them.<br>2.Understand the difference between Life & Non Life Insurance.<br>3. Understand how to choose life insurance policies based on their needs |
| 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 | Students will able to<br>1. Install and configure Android application development tools.<br>2. Design and develop user Interfaces for the Android platform.<br>3. understanding various controls in android and their events.<br>4. Apply Java programming concepts to Android application development.<br>5. understanding fragments, layouts and deploying application to publish on Play Store |
| 33 | BCA VI sem. | B.Law III | 1. Analyze and evaluate the cyber security needs of an organization.<br>2. Determine and analyze software vulnerabilities and security solutions to reduce the<br>risk of exploitation.<br>3. Measure the performance and troubleshoot cyber security systems.<br>4. To understand different types of Viruses, frauds and how to deal with that. |

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| | | | 5. To know about Teenage Vandalism, Pronography offences. |
| 34 | BCA VI sem. | Software Testing | Students will be able to:<br>1. To study fundamental concepts in software testing<br>2. To discuss various software testing issues and solutions in software unit test, integration and system testing.<br>3. To expose the advanced software testing topics, such as object-oriented software testing methods. |
| 35 | BCA VI sem. | Service Marketing | 1. 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<br>2. Understand and explain the nature and scope of services marketing and present about this in a professional and engaging manner.<br>3. Understand the expectations of customers and know how to translate this knowledge into genuine value for customers<br>4.Understand current research trends in services marketing and management |
| 36 | BCA VI sem. | Project | Students of VI 5semester 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. |
| 1 | B. Sc. CS I Sem | Computer Fundamental | Student who complete this course successfully will acquire:<br>1. knowledge of computer fundamental, CPU and its functionalities.<br>Understanding of block diagram of hardware peripherals<br>3. understanding the concepts of software and its types.<br>4. understanding the number of system and its conversion between different numbers of systems. |
| 2 | B. Sc. CS I Sem | Digital Electronics | 1. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.<br>2. To understand and examine the structure of various number systems and its application in digital design. |
| 3 | B. Sc. CS I Sem | Operating System I | Students will able to:<br>1. Gain knowledge of system software, program and process.<br>2. Understand types of operating system, basic functions of OS and evolution of OS |

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| | | | 3. Understand the concept of Process, process control block and threads.<br>4. Understand the CPU scheduling Non-pre-emptive and Pre-emptive scheduling algorithms.<br>Understand the concept of synchronization and deadlock. |
| 4 | B. Sc. CS I Sem | C Programming-I | By the end of the course students will be able to:<br>1. Know about the history and features of C programming language<br>2. Interpret the basic principles of C Programming.<br>3. Acquire decision making and looping concepts.<br>4. Design and develop modular programming.<br>5. Explore usage of Arrays, array manipulation and strings |
| 5 | B. Sc. CS I Sem | Programming Methodology | Learn the history and types of programming.<br>Learn various approach of writing program.<br>Learn to develop simple algorithms and flow charts to solve a problem. |
| 6 | B. Sc. CS I Sem | English Communication skills (Linguistic Approach) | Upon successful completion of the course, the students will be able to:<br>1. Understand the different styles of communication.<br>2. Understand the effective speaking skills and develops effective reading comprehension.<br>3. Understand how to write a good personal profile and improve one's presentation skills.<br>4. Develop good writing skills. |
| 7 | B. Sc. CS I Sem | Mathematical Foundation | On completion of this course student be able to:<br>1. Know how to represent various statements using set, relations, functions, permutations and combinations, groups , graphs and trees.<br>2. Use logical notations to formulate and reason about fundamental mathematical concepts such as set , relations, functions and algebraic structures.<br>3. Analyses the growth of functions and real-world problems using various concepts like recurrence relations, graph implementation.<br>4.Apply mathematical logic to solve problems, pigeonhole principle to solve real time problems.<br>5. Model and solve real world problems using graphs and trees. |
| 8 | B. Sc. CS I Sem | Marathi | Students will learn the different poems and different stories in Marathi. |
| 9 | B. Sc. CS I Sem | Hindi | Students will learn the Hindi language. |

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| 10 | B. Sc. CS I Sem | Urdu | The urdu language for the students who wants to learn the poems and materials in urdu. |
| 11 | B. Sc. CS II Sem | Data Structure | 1.Study different advanced data structures types and their respective algorithms.<br>2. Have practical knowledge on the applications of data structures.<br>3.Select appropriate data structures as applied to specified problem definition.<br>4.Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various advance data structures.<br>5.Implement appropriate sorting/searching technique for given problem.<br>6.Design advance data structure using Nonlinear data structure. |
| 12 | B. Sc. CS II Sem | Operating System II | Students will learn the advanced concepts of operating systems. |
| 13 | B. Sc. CS II Sem | Microprocessor 8086 | At the end of the course, a student will be able to:<br>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.<br>2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.<br>3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements.<br>4. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller.<br>5. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.<br>6. Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems. |
| 14 | B. Sc. CS II Sem | Numerical Methods – M2 | students will be able to:<br>1.Understand the difference between actual and approximate values.<br>2.Understand Different types of errors. |

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| | | | 3.Understand the difference between Different root finding techniques.<br>4.Learn how to use different methods to compute approximate answers to real life problems. |
| 15 | B. Sc. CS II Sem | English Communication skills( Soft Skill Development) | 1. Students will be able to improve their Listening Skills.<br>2. Students will be able to improve their reading comprehension.<br>3. Students will be able to participate in group discussion.<br>4. Students will be able to know the interview techniques.<br>5. Students will be develop their soft skills to handle day to day life. |
| 16 | B. Sc. CS II Sem | Constitution of India | Students will able to understand their fundamental rights and other things related constitution. |
| 17 | B. Sc. CS II Sem | DBMS | Students will be able to create a database using the DDL commands.<br>Students will be able to write SQL queries using DML, DCL and TCL queries.<br>Students can understand the transactions states. |
| 18 | B. Sc. CS III Sem | Advanced Data Structure | 1.Design and analyze programming problem statements.<br>2.Choose appropriate data structures and algorithms,<br>3. Understand the ADT/libraries, and use it to design algorithms for a specific problem.<br>4.Understand the necessary mathematical abstraction to solve problems.<br>5. Come up with analysis of efficiency and proofs of correctness<br>6. Comprehend and select algorithm design approaches in a problem specific manner. |
| 19 | B. Sc. CS III Sem | UNIX Operating System | 1.To familiarize students with the concepts, design, and structure of the UNIX operating system.<br>2.To teach students the use of basic UNIX Utilities<br>3.To teach students the principles of UNIX shell programming. |
| 20 | B. Sc. CS III Sem | Database Management System | On completion of this course student be able to:<br>1.Install, configure, and interact with a relational database management system.<br>2.Learn and apply the Structured Query Language (SQL) for database definition and manipulation.<br>3.Master the basic concepts and appreciate the applications of database systems. |

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| | | | 4.Master the basics of SQL and construct queries using SQL.<br>5.Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.<br>6.Be familiar with relational database theory, and be able to write relational algebra expressions for queries.<br>7.Master sound design principles for logical design of databases, including the E-R method and normalization approach. |
| 21 | B. Sc. CS III Sem | PC Maintenance | On successful completion of this course a participant shall be able to:<br>1. Understand basic concept & structure of Computer Hardware & Networking Components.<br>2.Identify the existing configuration of the computers & peripherals.<br>3.Upgrading the same as & when required.<br>4.Apply their knowledge about computer peripherals to identify/rectify problems on board.<br>5.Integrate the PC's into Local Area Network & re-install OS & various shipboard applications. |
| 22 | B. Sc. CS III Sem | Programming in C++ | Upon completion of this course, the students will be able to:<br>1.Understand the difference between the top-down and bottom-up approach<br>2.Apply the concepts of object-oriented programming<br>3.Demonstrate the use of various OOPs concepts with the help of programs.<br>4.Describe the concept of function overloading, operator overloading, and polymorphism.<br>5.develop software in the C++ programming language |
| 23 | B. Sc. CS III Sem | Statistical Method | Students learn to design data collection plans and basic tools of descriptive statistics.<br>1. Organize, manage and present data.<br>2. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.<br>3. Analyze statistical data using measures of central tendency, dispersion and location.<br>4. Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.<br>5. Translate real-world problems into probability models. |

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| 24 | B. Sc. CS IV Sem | Software Engg. | Students will able to:<br>1. Define various software application domains and remember different process models used in software development.<br>2. Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques<br>. 3. Convert the requirements model into the design model and demonstrate use of software and user interface design principles. |
| 25 | B. Sc. CS IV Sem | FEDORA | 1. Describe the relationship between GNU and Linux.<br>2.Describe the relationship between Linux and Unix. -<br>3.Discuss features which make Linux a viable and popular operating system. -<br>4. Describe various operating system concepts such as multitasking, virtual memory and multiuser environments as they apply to Fedora Linux |
| 26 | B. Sc. CS IV Sem | Basic Networking | After completing this course the student must demonstrate the knowledge and ability to:<br>1. Independently understand basic computer network technology.<br>2. Understand and explain Data Communications System and its components.<br>3. Identify the different types of network topologies and protocols.<br>4. Enumerate the different multiplexing and modulation, switching types.<br>5. Identify the different types of network devices and their functions within a network<br>6. Understand and build the skills of sub netting and routing mechanisms.<br>7. Familiarity with the basic protocols of computer networks, and how they can be used<br>to assist in network design and implementation. |
| 27 | B. Sc. CS IV Sem | Core Java-I | On completion of the course the student should be able to:<br>1.Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.<br>2. Read and make elementary modifications to Java programs that solve real-world problems.<br>3. Validate input in a Java program. |
| 28 | B. Sc. CS IV Sem | Advance DBMS | On completion of this course student be able to:<br>1.Explain the principles of concurrency control.<br>2.Explain the principles of recovery management. |

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| | | | 3.Know recent developments and active research topics in the database.<br>4.Student will be able to perform queries on databases. |
| 29 | B. Sc. CS IV Sem | Web Fundamental | The student will be able to:<br>1. Analyze a web page and identify its elements and attributes.<br>2. Create web pages using XHTML and Cascading Style Sheets. Build dynamic web pages using JavaScript (Client-side programming).<br>3. Build interactive web applications using AJAX. |
| 30 | B. Sc. CS V Sem | Core Java II | At the end of this course students will be able to:<br>1. Understand Input/output Stream and its operations<br>2. Explore Applets and Graphics<br>3.Develop the applications using Java Database Connectivity (JDBC)<br>4.Develop the applications using networking. |
| 31 | B. Sc. CS V Sem | Basic of Android | By the end of the course students will be able to:<br>1.Install and Android application development tools.<br>2.Design and develop user Interfaces for the Android platform.<br>3.Apply Java programming concepts to Android application development.<br>By the end of the course, student will be able to write simple GUI applications, use built-in widgets and components |
| 32 | B. Sc. CS V Sem | Software cost estimation | 1.Apply project management concepts and techniques to an IT project.<br>2.Identify estimation technique for software development.<br>3. Explain project management in terms of the software development process.<br>4.Describe the responsibilities of IT project managers.<br>5. Apply cost estimation concepts through working in a group as team leader or active team member on and IT project. |
| 33 | B. Sc. CS V Sem | Basic of computer graphics | Students will able to:<br>1. To list the basic concepts used in computer graphics.<br>2. To implement various algorithms to scan, convert the basic geometrical primitives, transformations, |

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| 34 | B. Sc. CS V Sem | Elective 1: PHP Prog ASP.net | After successful completion of this course, students will be able to:<br>1. Write PHP scripts to handle HTML forms.<br>2. Write regular expressions including modifiers, operators, and meta characters.<br>3. Create PHP programs that use various PHP library functions, and that manipulate files and directories. |
| 35 | B. Sc. CS V Sem | Elective 2: Data Mining Advanced Networking | 1. Understand Data Warehouse fundamentals, Data Mining Principles<br>2. Design data warehouse with dimensional modeling and apply OLAP operations.<br>3. Identify appropriate data mining algorithms to solve real world problems<br>4. Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining<br>5. Describe complex data types with respect to spatial and web mining.<br>6. Benefit the user experiences towards research and innovation. integration. |
| 36 | B. Sc. CS VI Sem | Software Quality and Testing | Students will try to learn:<br>1 Basic software debugging methods.<br>2. White box testing methods and techniques.<br>3. Black Box testing methods and techniques.<br>4. Designing test plans.<br>5 Different testing tools (familiar with open source tools)<br>6. Quality Assurance models. |
| 37 | B. Sc. CS VI Sem | Android Application Development | 1. The students develop understanding of the fundamentals of Android operating systems<br>2. Students can demonstrate their skills of using Android software development tools<br>3. Students develop the ability to develop software with reasonable complexity on mobile platform<br>4. Students will be able to deploy software to mobile devices<br>5. Students develop the ability to debug programs running on mobile devices |
| 38 | B. Sc. CS VI Sem | Theory of Computation | At the end of the course, students:<br>1.will apply knowledge of computing and mathematics appropriate to the discipline.<br>2.will function effectively as a member of a team in order to accomplish a common goal.<br>3.will apply mathematical foundations, algorithmic principles and computer science theory to the mod- |

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| | | | eling and design of computer-based systems in a way that demonstrates |
| 39 | B. Sc. CS VI Sem | Advanced Computer Graphics | Students will able to:<br>1. To list the basic concepts used in computer graphics.<br>2. To implement various algorithms to scan, convert the basic geometrical primitives, transformations,<br>3. To describe the importance of viewing and projections.<br>4. To define the fundamentals of animation, virtual reality and its related technologies. |
| 40 | B. Sc. CS VI Sem | Elective 1 Advance PHP | After successful completion of this course, students will be able to:<br>1. Write PHP scripts to handle HTML forms.<br>2. Write regular expressions including modifiers, operators, and metacharacters.<br>3. Create PHP programs that use various PHP library functions, and that manipulate files and directories.<br>4. Analyze and solve various database tasks using the PHP language.<br>5. Analyze and solve common Web application tasks by writing PHP programs. |
| 41 | B. Sc. CS VI Sem | Elective 2 Programming Language: C# | 1.Understand code solutions and compile C# projects within the<br>2. Design and develop professional console and window based.<br>3.Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements C#.NET application. |
| 1 | B. Sc. IT I Sem | Computer Fundamental | Student who complete this course successfully will acquire:<br>1. knowledge of computer fundamental, CPU and its functionalities.<br>Understanding of block diagram of hardware peripherals<br>3. understanding the concepts of software and its types.<br>4. understanding the number of system and its conversion between different numbers of systems. |
| 2 | B. Sc. IT I Sem | Digital Electronics | 1. Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.<br>2. To understand and examine the structure of various number systems and its application in digital design. |

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| 3 | B. Sc. IT II Sem | Operating System I | Students will able to:<br>1. Gain knowledge of system software, program and process.<br>2. Understand types of operating system, basic functions of OS and evolution of OS<br>3. Understand the concept of Process, process control block and threads.<br>4. Understand the CPU scheduling Non-pre-emptive and Pre-emptive scheduling algorithms.<br>Understand the concept of synchronization and deadlock. |
| 4 | B. Sc. IT I Sem | C Programming | By the end of the course students will be able to:<br>1. Know about the history and features of C programming language<br>2. Interpret the basic principles of C Programming.<br>3. Acquire decision making and looping concepts.<br>4. Design and develop modular programming.<br>5. Explore usage of Arrays, array manipulation and strings |
| 5 | B. Sc. IT I Sem | Programming Methodology | Learn the history and types of programming.<br>Learn various approach of writing program.<br>Learn to develop simple algorithms and flow charts to solve a problem. |
| 6 | B. Sc. IT I Sem | English Communication skills (Linguistic Approach) | Upon successful completion of the course, the students will be able to:<br>1. Understand the different styles of communication.<br>2. Understand the effective speaking skills and develops effective reading comprehension.<br>3. Understand how to write a good personal profile and improve one's presentation skills.<br>4. Develop good writing skills. |
| 7 | B. Sc. IT I Sem | Mathematical Foundation | On completion of this course student be able to:<br>1. Know how to represent various statements using set, relations, functions, permutations and combinations, groups , graphs and trees.<br>2. Use logical notations to formulate and reason about fundamental mathematical concepts such as set , relations, functions and algebraic structures.<br>3. Analyses the growth of functions and real-world problems using various concepts like recurrence relations, graph implementation.<br>4.Apply mathematical logic to solve problems, pigeonhole principle to solve real time problems.<br>5. Model and solve real world problems using graphs and trees. |

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| 8 | B. Sc. IT I Sem | Marathi | Students will learn the different poems and different stories in Marathi. |
| 9 | B. Sc. IT I Sem | Hindi | Students will learn the Hindi language. |
| 10 | B. Sc. IT I Sem | Urdu | The urdu language for the students who wants to learn the poems and materials in urdu. |
| 11 | B. Sc. IT II Sem | Data Structure | 1.Study different advanced data structures types and their respective algorithms.<br>2. Have practical knowledge on the applications of data structures.<br>3.Select appropriate data structures as applied to specified problem definition.<br>4.Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various advance data structures.<br>5.Implement appropriate sorting/searching technique for given problem.<br>6.Design advance data structure using Nonlinear data structure. |
| 12 | B. Sc. IT II Sem | Operating System II | Students will learn the advanced concepts of operating systems. |
| 13 | B. Sc. IT II Sem | Microprocessor 8086 | At the end of the course, a student will be able to:<br>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.<br>2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller.<br>3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements.<br>4. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller.<br>5. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.<br>6. Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems. |

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| 14 | B. Sc. IT II Sem | Numerical Methods – M2 | students will be able to:<br>1.Understand the difference between actual and approximate values.<br>2.Understand Different types of errors.<br>3.Understand the difference between Different root finding techniques.<br>4.Learn how to use different methods to compute approximate answers to real life problems. |
| 15 | B. Sc. IT II Sem | English Communication skills( Soft Skill Development) | 1. Students will be able to improve their Listening Skills.<br>2. Students will be able to improve their reading comprehension.<br>3. Students will be able to participate in group discussion.<br>4. Students will be able to know the interview techniques.<br>5. Students will be develop their soft skills to handle day to day life. |
| 16 | B. Sc. IT II Sem | Constitution of India | Students will able to understand their fundamental rights and other things related constitution. |
| 17 | B. Sc. IT III Sem | DBMS | On completion of this course student be able to:<br>1.Install, configure, and interact with a relational database management system.<br>2.Learn and apply the Structured Query Language (SQL) for database definition and manipulation.<br>3.Master the basic concepts and appreciate the applications of database systems.<br>4.Master the basics of SQL and construct queries using SQL.<br>5.Be familiar with a commercial relational database system (Oracle) by writing SQL using the system.<br>6.Be familiar with relational database theory, and be able to write relational algebra expressions for queries.<br>7.Master sound design principles for logical design of databases, including the E-R method and normalization approach. |
| 18 | B. Sc. IT III Sem | Android 1 | By the end of the course students will be able to:<br>1. Install and Android application development tools.<br>2. Design and develop user Interfaces for the Android platform.<br>3. Apply Java programming concepts to Android application development. |

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| | | | 4. By the end of the course, student will be able to write simple GUI applications, use built-in widgets and components |
| 19 | B. Sc. IT III Sem | IT Tool and web designing II | 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 **JavaScript** data types.<br>1.Identify expressions and operators.<br>2.Know flow control.<br>3.Demonstrate objects and arrays usage.<br>4.Define functions and methods.<br>5.Define constructors and inheritance.<br>6.Demonstrate usage of pattern matching with regular expressions. |
| 20 | B. Sc. IT III Sem | Programming in CPP II | Upon completion of this course, the students will be able to:<br>1.Understand the difference between the top-down and bottom-up approach<br>2.Apply the concepts of object-oriented programming<br>3.Demonstrate the use of various OOPs concepts with the help of programs.<br>4.Describe the concept of function overloading, operator overloading, and polymorphism.<br>5.Develop software in the C++ programming language, |
| 21 | B. Sc. IT III Sem | Personality development | 1. The Personality Development Programs will groom their overall personality.<br>2. This course will help them to experience a positive attitude.<br>3. This course will help them to rise in confidence level. |
| 22 | B. Sc. IT III Sem | Statistical Method | Students learn to design data collection plans and basic tools of descriptive statistics.<br>1. Organize, manage and present data.<br>2. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.<br>3. Analyze statistical data using measures of central tendency, dispersion and location. |

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| | | | 4. Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.<br>5. Translate real-world problems into probability models. |
| 23 | B. Sc. IT IV Sem | Advanced DBMS | On completion of this course student be able to:<br><br>1.Explain the principles of concurrency control.<br>2.Explain the principles of recovery management.<br>3.Know recent developments and active research topics in the database.<br>4.student will be able to perform queries on the database. |
| 24 | B. Sc. IT IV Sem | Advanced Android application & Development | 1. The students develop understanding of the fundamentals of Android operating systems<br>2. Students can demonstrate their skills of using Android software development tools<br>3. Students develop the ability to develop software with reasonable complexity on mobile platform<br>4. Students will be able to deploy software to mobile devices |
| 25 | B. Sc. IT IV Sem | IT Tools & web designing II | 1. Be able to use the HTML programming language.<br>2.Resolves written HTML codes.<br>3.Runs the page he/she has designed using HTML codes.<br>4.Be able to use the Design Programs.<br>5.Uses Microsoft Expression Web 4 programme.<br>6.Designs site and page via Microsoft Expression Web programme.<br>7.Uses the program Web Page Maker. |
| 26 | B. Sc. IT IV Sem | Core Java-I | At the end of this course, each student should be able to:<br>1. List and use Object Oriented Programming concepts for problem solving.<br>2. Write programs using Java collection API as well as the java standard class library.<br>3. Solve the interdisciplinary applications using the concept of inheritance.<br>4. Apply JDBC to provide a program level interface for communicating with database using java programming.<br>5. Apply the garbage collection for saving the resources automatically |
| 27 | B. Sc. IT IV Sem | Aptitude and logical reasoning | |

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| | | | On successful completion of the course the students will be able to:<br>1.Understand the basic concepts of QUANTITATIVE ABILITY<br>2.Understand the basic concepts of LOGICAL REASONING Skills<br>3.Acquire satisfactory competency in use of VERBAL REASONING<br>4.Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability<br>5.Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc. |
| 28 | B. Sc. IT IV Sem | Software Project Management-I | After completing this course the students will be able to:<br>1. Apply project management concepts and techniques to an IT project.<br>2. Identify issues that could lead to IT project success or failure.<br>3. Explain project management in terms of the software development process. |
| 29 | B. Sc. IT V Sem | Software Project Management II | After completing this course the students will be able to:<br>1. Apply project management concepts through working in a group as team leader or active team member on an IT project.<br>2. Describe the responsibilities of IT project managers<br>3. Recognize, trace and resolve IT related crises using project management software |
| 30 | B. Sc. IT V Sem | Data communication and Networking | After completing this course the student must demonstrate the knowledge and ability to:<br>1. Independently understand basic computer network technology.<br>2. Understand and explain Data Communications System and its components.<br>3. Identify the different types of network topologies and protocols.<br>4. Enumerate the different multiplexing and modulation, switching types.<br>5. Identify the different types of network devices and their functions within a network<br>6. Understand and build the skills of sub netting and routing mechanisms.<br>7. Familiarity with the basic protocols of computer networks, and how they can be used |

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| | | | to assist in network design and implementation. |
| 31 | B. Sc. IT V Sem | Programming with PHP | After successful completion of this course, students will be able to:<br>1. Write PHP scripts to handle HTML forms.<br>2. Write regular expressions including modifiers, operators, and meta characters.<br>3.Create PHP programs that use various PHP library functions, and that manipulate files and directories. |
| 32 | B. Sc. IT V Sem | Ethical Hacking | 1.Think critically<br>2. Perform and share cooperatively in team projects<br>3. Review and practice computer and network etiquette and ethics found in working environments<br>4.Evaluate and implement new and future technologies into current system<br>5. Install, configure, use and manage hacking software on a closed network environment<br>6. Evaluate best practices in security concepts to maintain confidentiality, integrity and availability of computer systems |
| 33 | B. Sc. IT V Sem | Elective 1<br>Data Mining | After successful completion of this course, students will be able to:<br>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. |
| 34 | B. Sc. IT V Sem | Elective 2<br>Computer Graphics | Students will able to:<br>1. To list the basic concepts used in computer graphics.<br>2. To implement various algorithms to scan, convert the basic geometrical primitives, transformations |
| 35 | B. Sc. IT VI Sem | Software Testing and Quality Assurance | The student should be able to:<br>1.Understand software testing and quality assurance as a fundamental component of software life cycle<br>2.Define the scope of software testing and quality assurance projects<br>3.Efficiently perform software testing and quality assurance activities using modern software tools.<br>4.Estimate cost of a testing and quality assurance project and manage budgets<br>5.Prepare test plans and schedules for testing and quality assurance project |

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| | | | 6.Develop testing and quality assurance project staffing requirements. Effectively manage a software projects |
| 36 | B. Sc. IT VI Sem | Wireless networking | By the end of the course students will be able to:·<br>1. To study the evolving wireless technologies and standards ·<br>2. To understand the architectures of various access technologies such as 1G, 2G, 3G, 4G, WiFi etc. ·<br>3. To understand various protocols and services provided by next generation networks.<br>4. Keep themselves updated on latest wireless technologies and trends in the communication field<br>5. Understand the transmission of voice and data through various networks |
| 37 | B. Sc. IT VI Sem | Advanced Programming with PHP | After successful completion of this course, students will be able to:<br>1: Write PHP scripts to handle HTML forms.<br>2: Write regular expressions including modifiers, operators, and met characters.<br>3: Create PHP programs that use various PHP library functions, and that manipulate files and directories.<br>4: Analyze and solve various database tasks using the PHP language.<br>5: Analyze and solve common Web application tasks by writing PHP programs. |
| 38 | B. Sc. IT VI Sem | Cyber Law and Security | 1.Analyze and resolve security issues in networks and computer systems to secure an IT infrastructure.<br>2.Design, develop, test and evaluate secure software.<br>3.Develop policies and procedures to manage enterprise security risks.<br>4.Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training.<br>Interpret and forensically investigate security incidents. |
| 39 | B. Sc. IT VI Sem | Elective 1 AJAX | At the end of this course the successful student will be able to:<br>1. Explain client-side concepts and compare and contrast client-side versus server-side scripting.<br>2. Use JavaScript to add dynamic content to pages. |

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| | | | 3. Write well-structured, easily maintained JavaScript code following accepted good practice.<br>4. Write JavaScript code that works in all major browsers. Program using DOM API to traverse, modify, and append nodes to documents,<br>event handlers to handle user-triggered events.<br>JavaScript to validate form data and to manage state information.<br>5. Use front-end JavaScript libraries and frameworks (e.g., jQuery)<br>6. Use Ajax to fetch information from the server and display it on the web page.<br>7. Create web applications with Ajax. |
| 40 | B. Sc. IT VI Sem | Elective 2<br>C# Programming | 1.Understand code solutions and compile **C#** projects within the<br>2.Design and develop professional console and window based<br>3.Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements **C#**.NET application. |
| 1 | B. Sc. AT I sem. | Workshop Technology - I | After completion of the course, student will be able to:<br>1. Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.<br>2. Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.<br>3. Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.<br>4. Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch,<br>connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.<br>5. Ability to design and model various basic prototypes in the trade of Welding such as Lap joint, Lap Tee<br>joint, Edge joint, Butt joint and Corner joint. |
| 2 | B. Sc. AT I sem. | Workshop Technology – II | After completion of the course , student will be able to:<br><br>1. Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint. |

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| | | | 2. Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.<br>3. Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.<br>4. Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch,<br>connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.<br>5. Ability to design and model various basic prototypes in the trade of Welding such as Lap joint, Lap Tee<br>joint, Edge joint, Butt joint and Corner joint. |
| 3 | B. Sc. AT I sem. | Electrical System | 1.Students will gain knowledge regarding the various laws and principles associated with electrical systems.<br>2. Students will gain knowledge regarding electrical machines and apply them for practical problems.<br>3. Students will gain knowledge regarding various types' semiconductors.<br>4. Student will gain knowledge digital electronics.<br>5. Student will gain knowledge on electronic systems. |
| 4 | B. Sc. AT I sem. | Electronics System | 1. Students will gain knowledge regarding the various laws and principles associated with electrical systems.<br>2. Students will gain knowledge regarding electrical machines and apply them for practical problems.<br>3. Students will gain knowledge regarding various types' semiconductors.<br>4. Student will gain knowledge digital electronics.<br>5. Student will gain knowledge on electronic systems. |
| 5 | B. Sc. AT I sem. | Computer Fundamental – I | The student after undergoing this course will be able to:<br>1. Demonstrate the use of mathematical software and solve simple mathematical problems.<br>2. Explain the needs of hardware and software required for a computation task.<br>3. State typical provisions of cyber law that govern the proper usage of Internet and computing resources.<br>4. Explain the working of important application software and their use to perform any engineering activity.<br>5. Demonstrate the use of Operating system commands and shell script |
| 6 | B. Sc. AT I sem. | Computer Fundamental – II | After successful completion of this course, students will be |

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| | | | 1. Able to perform documentation and presenting skills.<br>2. Proficient in using Windows, Word Processing Applications, Spreadsheet Applications, Database Applications and Presentation Graphics Applications. |
| 7 | B. Sc. AT I sem. | Communication Skills in English – I | 1. Students will be aware of basic language skills<br>2. Students will be able to read and write English<br>3. Students will understand the skills required for speaker and goof listener.<br>4. Students will confident for the application of English<br>5. Word power of the students will be developed. |
| 8 | B. Sc. AT I sem. | Marathi | Will know the different Indian Sant and their writing materials. |
| 9 | B. Sc. AT I sem. | Hindi | Will get knowledge about different stories from the Hindi writings. |
| 10 | B. Sc. AT II sem. | Elements of Mechanical Engineering | 1. Understand concepts of energy, its sources and conversion.<br>2. Understand the basic concepts of thermodynamics.<br>3. Explain the fundamental concepts of properties of steam |
| 11 | B. Sc. AT II sem. | Engineering Material | 1. Classify engineering materials based on their structure.<br>2. Draw crystallographic planes and directions.<br>3. Distinguish between elastic and plastic behavior of materials.<br>4. Distinguish between isomorphous and eutectic phase diagram.<br>5. Classify materials based on their electrical and magnetic properties.<br>6. Propose a solution to prevent corrosion. |
| 12 | B. Sc. AT II sem. | Engineering Graphics - I | 1. To make use of drawing instruments effectively for drawing and dimensioning.<br>2. To understand the conventions and methods of engineering drawing.<br>3. To know the concept of projections of points, lines, planes, solids and section of solids. |

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| | | | 4. To understand the Construction isometric and orthographic views of given objects. |
| 13 | B. Sc. AT II sem. | Engineering Graphics – II | Students will be able to:<br>5. Use of drawing instruments effectively for drawing and dimensioning.<br>6. Explain conventions and methods of engineering drawing.<br>7. Apply concept of projections of points, lines, planes, solids and section of solids.<br>8. Construct isometric and orthographic views of given objects |
| 14 | B. Sc. AT II sem. | Engineering Mechanics - I | 1. To know and apply fundamental Laws of Engineering Mechanics<br>2. To know and apply Conditions of static equilibrium to analyze given force system<br>3. To compute Centre of gravity and Moment of Inertia of plane surfaces<br>4. To compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion<br>5. To know and discuss relation between force and motion characteristics |
| 15 | B. Sc. AT II sem. | Engineering Mechanics - II | Students will be able to:<br>1. Apply fundamental Laws of Engineering Mechanics<br>2. Apply Conditions of static equilibrium to analyze given force system<br>3. Compute Centre of gravity and Moment of Inertia of plane surfaces<br>4. Compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion<br>5. Know and discuss relation between force and motion characteristics |
| 16 | B. Sc. AT II sem. | Communication Skills in English – II | Students will be able to:<br>1. Knowledge about the different philosophers<br>2. Understand the poetry from different writers.<br>3. Able to use the grammar in their speaking and writing. |
| 17 | B. Sc. AT II sem. | Marathi | Will learn the different Marathi writers and their writing material and works. |
| 18 | B. Sc. AT II sem. | Hindi | Will get knowledge about the different Hindi writers. |
| 19 | B. Sc. AT III sem. | Production Management | 1.understand the relationship between OM (operations management) and productivity<br>explain the importance of and how to develop an operations strategy to achieve a competitive advantage |

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| | | | describe how to achieve successful operations in a global environment<br>understand how to manage resources to achieve superior quality through statistical process control<br>2.understand the methods involved in forecasting demand<br>explain how to design goods and services<br>3.describe the three major process strategies and capacity planning<br>understand how to develop location strategies<br>4.review the importance of developing the proper layout strategy<br>5.explain the relationship between a successful human resources strategy and job design principle<br>6.review the principles of supply-chain management<br>describe the methods involved in successful inventory management<br>understand the methods involved in aggregate scheduling<br>understand material requirements planning management<br>7.Identify the principles involved in short-term scheduling<br>explain and apply the principles of project management<br>8.Describe the strategic importance of maintenance and reliability activities |
| 20 | B. Sc. AT III sem. | Mechanical Measurement | 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.<br>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.<br>3. Apply the principles of instrumentation for transducers & measurement of non electrical parameters like temperature, pressure, flow, speed, force and stress in mechanical engineering applications for sustainable development.<br>4. Apply the principles of miscellaneous measurements for humidity, density, level and blood pressure. |
| 21 | B. Sc. AT III sem. | Machine Drawing 1 | 1. Analysis of complex design systems related to mechanical Engineering. |

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| | | | 2. Making use of appropriate laboratory tools and designing innovative methods.<br>3. To motivate students to develop new innovative methods for measuring product Characteristics.<br>4. To enhance the ability of students to work as teams.<br>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement |
| 22 | B. Sc. AT III sem. | Introduction to Automobile engg. | 1. Students will be able to understand classification of various of Automobile<br>2. Students will be able to understand about the various type Chassis construction and working and operations<br>3. Students will be understand the various types of Automobile Technology<br>4. Students will be understand various types Engine specification and Measurements |
| 23 | B. Sc. AT III sem. | Engine 1 | 1. Students will be able to understand classification of various of IC and EC Engines types of operations<br>2. Students will be able to understand about the various type engine construction and working and operations<br>3. Students will be understand the various types two stroke and four stroke engine and their terminology<br>4. Students will be understand various types Engine specification and Measurements<br>5. Students will be understand Various types of automobile fuel and properties of fuel |
| 24 | B. Sc. AT III sem. | Transmission System 1 | 1. Utilize appropriate safety procedures, perform general transmission and transaxle diagnosis.<br>2. Perform automatic transmission and transaxle maintenance and adjustments.<br>3. Perform in-vehicle and off-vehicle automatic transmission and transaxle repair.<br>4. Properly and safely use and maintain tools and equipment related to automatic transmission service and repair.<br>5. Explain the basic gear design, gear combination, gear ratios, and torque multiplication. |
| 25 | B. Sc. AT IV sem. | Industrial Organisation 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 behaviour and subsequently consumers and policy-makers. Topics covered may |

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| | | | include theories of monopoly, price discrimination, oligopoly, auctions, vertical and horizontal integration, economies of scale and scope, network externalities, and regulation. |
| 26 | B. Sc. AT IV sem. | Electrical Technology | On completion of the course students will be able to<br>1. Predict the behavior of any electrical and magnetic circuits.<br>2. Formulate and solve complex AC, Dc circuits.<br>3. Identify the type of electrical machine used for that particular application.<br>4. Realize the requirement of transformers in transmission and distribution of electric power and other applications.<br>5. Function on multi-disciplinary teams. |
| 27 | B. Sc. AT IV sem. | Machine Drawing II | 1. Analysis of complex design systems related to mechanical Engineering.<br>2. Making use of appropriate laboratory tools and designing innovative methods.<br>3. To motivate students to develop new innovative methods for measuring product Characteristics.<br>4. To enhance the ability of students to work as teams.<br>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement |
| 28 | B. Sc. AT IV sem. | Automobile Tool II | 1. Students will be able to understand various types of General Tools<br>2. Students will be able to understand about the various type of Special purpose Tools<br>3. Students will be understand the various types Machinery Tools<br>4. Students will be understand various types of Hand Tools<br>5. Students will understand various types of Machinery. |
| 29 | B. Sc. AT IV sem. | Engine II | 1. Students will be able to understand various types of fuel supply on SI engine<br>2. Students will be able to understand about the various type of fuel supply system on CI engine<br>3. Students will be understand the various types Lubrication system and their construction and working<br>4. Students will be understand various types cooling system and construction and working<br>5.Students will be understand Various types ignition system and their operation |

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| | | | 6.Students will be understand Various types air pollution and standard noms |
| 30 | B. Sc. AT IV sem. | Transmission System II | 1. Utilize appropriate safety procedures, perform general transmission and transaxle diagnosis.<br>2. Perform automatic transmission and transaxle maintenance and adjustments.<br>3. Perform in-vehicle and off-vehicle automatic transmission and transaxle repair.<br>4. Properly and safely use and maintain tools and equipment related to automatic transmission service and repair.<br>5. Explain the basic gear design, gear combination, gear ratios, and torque multiplication. |
| 31 | B. Sc. AT V sem. | EDP I | 1. understand the nature of entrepreneurship<br>2. understand the function of the entrepreneur in the successful, commercial application of innovations<br>3. confirm an entrepreneurial business idea<br>4. identify personal attributes that enable best use of entrepreneurial opportunities<br>5. explore entrepreneurial leadership and management style. |
| 32 | B. Sc. AT V sem. | Automobile Trouble Maint. & Testing I | 1. Students will be understand various Troubles of cooling system<br>2. Students will be understand various Troubles of Ignition system<br>3. Students will be understand various Troubles of Braking system<br>4. Students will be understand various Troubles of starting system<br>5. Students will be understand various Troubles of steering System<br>6. Students will be understand various Troubles of Engine system |
| 33 | B. Sc. AT V sem. | Automobile Electrical and electronics system I | 1. Students will be able to understand various types Battery requirements of battery<br>2.) Students will be able to understand about the various Battery charging system and construction working<br>3. Students will be understand the various types electrical symbol, wiring system<br>4.Students will be understand the various types Headlight system, instrument panel, |

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| | | | 5.Students will be understand the various types fuse, and switch |
| 34 | B. Sc. AT V sem. | Mechatronics I | Identification of key elements of mechatronics system and its representation in<br>terms of block diagram<br>1. Understanding the concept of signal processing and use of interfacing systems such<br>as ADC, DAC, digital I/O<br>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller<br>3. Time and Frequency domain analysis of system model (for control application)<br>4. PID control implementation on real time systems<br>5. Development of PLC ladder programming and implementation of real life systems. |
| 35 | B. Sc. AT V sem. | Body Chassis Maintenance | 1 Describe the concept of car body design, passenger safety, crumple zone and crash testing.<br>2 Identify the concepts of wind tunnel testing and vehicle body optimization techniques to reduce drag.<br>3 Classify the various types of bus body construction, seating layout, regulations and comfort.<br>4 Describe the various heavy vehicle bodies, driver's visibility and cabin design.<br>5 Explain the various types of materials and painting techniques for vehicle body |
| 36 | B. Sc. AT V sem. | Transport management | 1. Students will be able to importance of transport management<br>2. Students will be able to types of road and traffic condition<br>3. Students will be able to Bus transport organization function and various operations<br>4. Students will be able to various types of good transport and operation<br>. Students will be able to various types transport operation and scope of transport industry |
| 37 | B. Sc. AT VI sem. | EDP II | Develop idea generation, creative and innovative skills<br>1. Aware of different opportunities and successful growth stories<br>2. Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business. |

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| | | | 3.Understand the entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.<br>4. Run a small enterprise with small capital for a short period and experience the science and art of doing business. |
| 38 | B. Sc. AT VI sem. | Automobile Trouble Maint. & Testing II | 1. Students will be understand various Troubles of Clutch system<br>2. Students will be understand various Troubles of Gear system<br>3. Students will be understand various Troubles of Steering system<br>4. Students will be understand various Troubles of Suspension system<br>5. Students will be understand various Troubles of Drive line System<br>6. Students will be understand various Troubles of Vehicle system |
| 39 | B. Sc. AT VI sem. | Automobile Electrical and electronics system II | 1. Students will be able to understand various types of electrical accessories of automobile vehicle<br>2. Students will be able to understand about the windshield wiper system, various types of Horns, and gauges construction working<br>3. Students will be understand the CDI Ignition system and construction and working<br>4.Students will be understand the various types of Starting system of engine<br>5.Students will be understand the various types fuse, and switch |
| 40 | B. Sc. AT VI sem. | Mechatronics II | Identification of key elements of mechatronics system and its representation in<br>terms of block diagram<br>1. Understanding the concept of signal processing and use of interfacing systems such<br>as ADC, DAC, digital I/O<br>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller<br>3. Time and Frequency domain analysis of system model (for control application)<br>4. PID control implementation on real time systems |
| 41 | B. Sc. AT VI sem. | Autocad | 1. Demonstrate basic concepts of the AutoCAD software<br>2. Apply basic concepts to develop construction (drawing) techniques |

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| | | | 3. Ability to manipulate drawings through editing and plotting techniques<br>4. Understand geometric construction<br>5. Produce template drawings<br>6. Produce 2D Orthographic Projections<br>7. Understand and demonstrate dimensioning concepts and techniques<br>8. Understand Section and Auxiliary Views<br>9. Become familiar with the use of Blocks, Design Center, and Tool Palettes<br>10. Become familiar with Solid Modeling concepts and techniques. |
| 42 | B. Sc. AT VI sem. | Vehicle Rule | 1.Students know what traffic is.<br>2.Students know that traffic can hurt me.<br>3.Students know I must be careful on the road.<br>4.Students can help to be safe on the road.<br>5.There are other people who can help me be safe on the road.<br>6.Students know that walking is good for me and the environment.<br>7.Students know the different parts of the road and how to behave on each. |
| 1 | B. Sc. WT I sem. | Workshop Technology - I | After completion of the course, student will be able to:<br>1. Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.<br>2. Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.<br>3. Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.<br>4. Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch,<br>connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.<br>5. Ability to design and model various basic prototypes in the trade of Welding such as Lap joint, Lap Tee<br>joint, Edge joint, Butt joint and Corner joint. |
| 2 | B. Sc. WT I sem. | Workshop Technology – II | After completion of the course , student will be able to: |

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| | | | 1. Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.<br>2. Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.<br>3. Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.<br>4. Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch,<br>connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.<br>5. Ability to design and model various basic prototypes in the trade of Welding such as Lap joint, Lap Tee<br>joint, Edge joint, Butt joint and Corner joint. |
| 3 | B. Sc. WT I sem. | Electrical System | 1.Students will gain knowledge regarding the various laws and principles associated with electrical systems.<br>2. Students will gain knowledge regarding electrical machines and apply them for practical problems.<br>3. Students will gain knowledge regarding various types' semiconductors.<br>4. Student will gain knowledge digital electronics.<br>5. Student will gain knowledge on electronic systems. |
| 4 | B. Sc. WT I sem. | Electronics System | 1. Students will gain knowledge regarding the various laws and principles associated with electrical systems.<br>2. Students will gain knowledge regarding electrical machines and apply them for practical problems.<br>3. Students will gain knowledge regarding various types' semiconductors.<br>4. Student will gain knowledge digital electronics.<br>5. Student will gain knowledge on electronic systems. |
| 5 | B. Sc. WT I sem. | Computer Fundamental – I | The student after undergoing this course will be able to:<br>1. Demonstrate the use of mathematical software and solve simple mathematical problems.<br>2. Explain the needs of hardware and software required for a computation task.<br>3. State typical provisions of cyber law that govern the proper usage of Internet and computing resources.<br>4. Explain the working of important application software and their use to perform any engineering activity. |

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| | | | 5. Demonstrate the use of Operating system commands and shell script |
| 6 | B. Sc. WT I sem. | Computer Fundamental – II | After successful completion of this course, students will be<br>1. Able to perform documentation and presenting skills.<br>2. Proficient in using Windows, Word Processing Applications, Spreadsheet Applications, Database Applications and Presentation Graphics Applications. |
| 7 | B. Sc. WT I sem. | Communication Skills in English – I | 1. Students will be aware of basic language skills<br>2. Students will be able to read and write English<br>3. Students will understand the skills required for speaker and goof listener.<br>4. Students will confident for the application of English<br>5. Word power of the students will be developed. |
| 8 | B. Sc. WT I sem. | Marathi | Will know the different Indian Sant and their writing materials. |
| 9 | B. Sc. WT I sem. | Hindi | Will get knowledge about different stories from the Hindi writings. |
| 10 | B. Sc. WT II sem. | Elements of Mechanical Engineering | 1. Understand concepts of energy, its sources and conversion.<br>2. Understand the basic concepts of thermodynamics.<br>3. Explain the fundamental concepts of properties of steam |
| 11 | B. Sc. WT II sem. | Engineering Material | 1. Classify engineering materials based on their structure.<br>2. Draw crystallographic planes and directions.<br>3. Distinguish between elastic and plastic behavior of materials.<br>4. Distinguish between isomorphous and eutectic phase diagram.<br>5. Classify materials based on their electrical and magnetic properties.<br>6. Propose a solution to prevent corrosion. |
| 12 | B. Sc. WT II sem. | Engineering Graphics - I | 1. To make use of drawing instruments effectively for drawing and dimensioning.<br>2. To understand the conventions and methods of engineering drawing.<br>3. To know the concept of projections of points, lines, planes, solids and section of solids.<br>4. To understand the Construction isometric and orthographic views of given objects. |
| 13 | B. Sc. WT II sem. | Engineering Graphics – II | Students will be able to:<br>5. Use of drawing instruments effectively for drawing and dimensioning. |

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| | | | 6. Explain conventions and methods of engineering drawing.<br>7. Apply concept of projections of points, lines, planes, solids and section of solids.<br>8. Construct isometric and orthographic views of given objects |
| 14 | B. Sc. WT II sem. | Engineering Mechanics - I | 1. To know and apply fundamental Laws of Engineering Mechanics<br>2. To know and apply Conditions of static equilibrium to analyze given force system<br>3. To compute Centre of gravity and Moment of Inertia of plane surfaces<br>4. To compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion<br>5. To know and discuss relation between force and motion characteristics |
| 15 | B. Sc. WT II sem. | Engineering Mechanics - II | Students will be able to:<br>1. Apply fundamental Laws of Engineering Mechanics<br>2. Apply Conditions of static equilibrium to analyze given force system<br>3. Compute Centre of gravity and Moment of Inertia of plane surfaces<br>4. Compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion<br>5. Know and discuss relation between force and motion characteristics |
| 16 | B. Sc. WT II sem. | Communication Skills in English – II | Students will be able to:<br>1. Knowledge about the different philosophers<br>2. Understand the poetry from different writers.<br>3. Able to use the grammar in their speaking and writing. |
| 17 | B. Sc. WT II sem. | Marathi | Will learn the different Marathi writers and their writing material and works. |
| 18 | B. Sc. WT II sem. | Hindi | Will get knowledge about the different Hindi writers. |
| 19 | B. Sc. WT III sem. | Production Management | 1.understand the relationship between OM (operations management) and productivity<br>explain the importance of and how to develop an operations strategy to achieve a competitive advantage<br>describe how to achieve successful operations in a global environment<br>understand how to manage resources to achieve superior quality through statistical process control |

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| | | | 2.understand the methods involved in forecasting demand<br>explain how to design goods and services<br>3.describe the three major process strategies and capacity planning<br>understand how to develop location strategies<br>4.review the importance of developing the proper layout strategy<br>5.explain the relationship between a successful human resources strategy and job design principle<br>6.review the principles of supply-chain management<br>describe the methods involved in successful inventory management<br>7.understand the methods involved in aggregate scheduling<br>understand material requirements planning management<br>8.identify the principles involved in short-term scheduling<br>9.explain and apply the principles of project management<br>10.)describe the strategic importance of maintenance and reliability activities |
| 20 | B. Sc. WT III sem. | Mechanical Measurement | 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.<br>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.<br>3. Apply the principles of instrumentation for transducers & measurement of non electrical parameters like temperature, pressure, flow, speed, force and stress in mechanical engineering applications for sustainable development.<br>4. Apply the principles of miscellaneous measurements for humidity, density, level and blood pressure. |
| 21 | B. Sc. WT III sem. | Machine Drawing I | 1. Analysis of complex design systems related to mechanical Engineering.<br>2. Making use of appropriate laboratory tools and design innovative methods.<br>3. To motivate students to develop new innovative methods for measuring product Characteristics. |

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| | | | 4. To enhance the ability of students to work as teams.<br>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement |
| 22 | B. Sc. WT III sem. | Applied Thermodynamics | At the end of the course students should be able to –<br>1.Apply thermodynamic laws for analysis of thermal systems.<br>2.Compare, select proper thermodynamic cycle for power conversion system under consideration.<br>3.Understand constructional details of 2S, 4S, SI/CI IC engine, Select suitable IC engine for the application.<br>4.Explain the need of inter cooling for a multi-stage compressor<br>5.Justify merits of nonconventional energy sources over conventional energy sources. |
| 23 | B. Sc. WT III sem. | Manufacturing Process I | Students should be able to:<br>1. General Introduction, Design for Manufacture, The Design Process, Selecting Materials and Manufacturing Process, Product quality, Manufacturing automation, Economics of Manufacture<br>2. Understand the role of manufacturing processes and remember other courses.<br>3. Get familiar with terms such as production, quality, automation, economist.<br>4. Casting processes, Solidification of Metals, Cast Structures, Casing Alloys, Ingot Casting and Continuous Casting, Casting Processes, Expendable Mold, Permanent Mold, Processing of Casting and Casting Design Learn about casting processes.<br>5. Be able to choose the best casting process for a specific product.<br>6.Bulk deformation processes, Forging, Rolling, Cold and hot Extrusion, Rod, Wire and Tube Drawing, Die Manufacturing Methods, Die Failures ,Learn about deformation processes.<br>7. Be able to choose the best forming process for a specific product.<br>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.<br>9. Understand in depth the sheet –metal processes and their formation mechanism. |

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| | | | 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.<br>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<br>12. Learn about joining processes. Be able to choose the proper process for different joining cases.<br>13. Introduction to Integrated Manufacturing Systems, Manufacturing Systems, Computer, Integrated-Manufacturing, Computer-Aided-Design, Group Technology, Cellular manufacturing, Flexible manufacturing systems, Just-in-time production<br>14.Understand what integrated manufacturing systems are. Understand the role of computers and special software within a production. |
| 24 | B. Sc. WT III sem. | Machine Tool Technology | 1.Students will be understand various types of machines Tools<br>2. Students will be understand various Types of Machines Parts<br>3.Students will be understand Milling Machine, Lathe Machine Tools<br>4. Students will be understand various Types CNC Machining Operations<br>5. Students will be understand various Special Machine Tools |
| 25 | 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 |

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| | | | integration, economies of scale and scope, network externalities, and regulation. |
| 26 | B. Sc. WT IV sem. | Electrical Technology | 1.Understand the basic properties of electrical elements, and solve DC circuit analysis problems. DC network theorems.<br>2. understand the fundamental behavior of AC circuits and solve circuit problems.<br>3. Apply the knowledge gained to explain the behavior of the circuit at series & parallel resonance of circuit & the effect of resonance.<br>4. Explain the basic properties of electromagnetic circuit & their application. |
| 27 | B. Sc. WT V sem. | Machine Drawing II | 1. Analysis of complex design systems related to mechanical Engineering.<br>2. Making use of appropriate laboratory tools and designing innovative methods.<br>3. To motivate students to develop new innovative methods for measuring product Characteristics.<br>4. To enhance the ability of students to work as teams.<br>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement |
| 28 | B. Sc. WT IV sem. | Heat Transfer | At the end of the course student shall be able to<br>1.Understand the application and importance of heat transfer in general as well industrial life.<br>2.Understand different modes of heat transfer. understand the working of different types of heat exchanger.<br>3.explain the mechanism of boiling and condensation. understand the mechanism of mass transfer |
| 29 | B. Sc. WT IV sem. | Manufacturing Process II | Upon completion of this course the student will be able to:<br>1. select appropriate processes for manufacturing industrial products;<br>2. identify routings of the operations and equipment involved in changing raw materials into useful products;<br>3. propose the integration of appropriate processes in a proper sequence to manufacture an economical product; |
| 30 | B. Sc. WT IV sem. | Strength of material | 1.Students who successfully complete this course will have demonstrated an ability to: |

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| | | | 2.Understand the concepts of stress and strain at a point as well as the stress-strain relationships for homogenous, isotropic materials.<br>3.Calculate the stresses and strains in axially-loaded members, circular torsion members, and members subject to flexural loadings.<br>4.Calculate the stresses and strains associated with thin-wall spherical and cylindrical pressure vessels.<br>5.Determine the stresses and strains in members subjected to combined loading and apply the theories of failure for static loading.<br>6.Determine and illustrate principal stresses, maximum shearing stress, and the stresses acting on a structural member.<br>7.Determine the deflections and rotations produced by the three fundamental types of loads: axial, torsion, and flexural.<br>8.Analyze slender, long columns subjected to axial loads.<br>9.Design simple bars, beams, and circular shafts for allowable stresses and loads. |
| 31 | B. Sc. WT V sem. | EDP | 1. understand the nature of entrepreneurship<br>2. understand the function of the entrepreneur in the successful, commercial application of innovations<br>3. confirm an entrepreneurial business idea<br>4. identify personal attributes that enable best use of entrepreneurial opportunities<br>5. explore entrepreneurial leadership and management style. |
| 32 | B. Sc. WT V sem. | Robotics I | 1.Design mechanical structure of a robot.<br>2.Understand the robot configuration and sub-systems<br>3. Interface different components of the robot with a microcontroller.<br>4.Understand principle of robot programming.<br>5.Design different types of robots for different purposes. |

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| 33 | B. Sc. WT V sem. | Tool Engg. | At the end of the course student will be able to:<br>1.Understand geometry of single and multi point cutting tools.<br>2. Give nomenclature of cutting tools.<br>3. Select proper cutting tools for material removal operations.<br>4. Design and develop jigs and fixtures for work pieces.<br>5. Select proper work holding and locating devices for the work piece. |
| 34 | B. Sc. WT V sem. | Computer Integrated Manufacturing | The students will be able to:<br>1.Solve the design problems of different types of transfer mechanisms.<br>2.Perform design and analysis of automatic storage and retrieval systems.<br>3.Evaluate the space requirements of different storage systems.<br>4. Design the workstation requirement for unattended operations and automated production system.<br>5. Optimize the number of machines required for a machine cell in a given production system. |
| 35 | B. Sc. WT V sem. | Quality Engg. & Industrial Management | 1. Students must be Understand the Operation of Industry<br>2. Students must be Understand the Management of Industry<br>3. Students must be Understand the Quality of Industrial Products<br>4. Students must be Understand the process of Industry<br>5. Students must be Understand the Different departmental activities of Industry |
| 36 | B. Sc. WT V sem. | Mechatronics | Identification of key elements of mechatronics system and its representation in<br>terms of block diagram<br>1. Understanding the concept of signal processing and use of interfacing systems such<br>as ADC, DAC, digital I/O<br>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller<br>3. Time and Frequency domain analysis of system model (for control application)<br>4. PID control implementation on real time systems |

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| 37 | B. Sc. WT VI sem. | EDP II | Develop idea generation, creative and innovative skills<br>1. Aware of different opportunities and successful growth stories<br>2. Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business.<br>3.Understand the entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.<br>4. Run a small enterprise with small capital for a short period and experience the science and art of doing business. |
| 38 | B. Sc. WT VI sem. | Robotics II | 1.Design mechanical structure of a robot.<br>2.Understand the robot configuration and sub-systems<br>3. Interface different components of the robot with a microcontroller.<br>4.Understand principle of robot programming.<br>5.Design different types of robots for different purposes. |
| 39 | B. Sc. WT VI sem. | Industrial hyd. & Pneumatics | At the end of the course student will be able to:<br>1.Understand the basic properties of the fluids and their significance.<br>2.Have brief knowledge about the working of turbines and pumps.<br>3.Select and employ correct valves as per the requirement of the system.<br>4.Select proper components for the pneumatic system.<br>5.Draw and interpret the hydraulic and pneumatic circuit diagram. |
| 40 | B. Sc. WT VI sem. | Mechatronics II | Identification of key elements of mechatronics system and its representation in<br>terms of block diagram<br>1. Understanding the concept of signal processing and use of interfacing systems such<br>as ADC, DAC, digital I/O<br>2. Interfacing of Sensors, Actuators using appropriate DAQ micro-controller<br>3. Time and Frequency domain analysis of system model (for control application)<br>4. PID control implementation on real time systems |
| 41 | B. Sc. WT VI sem. | Autocad | 1. Demonstrate basic concepts of the AutoCAD software |

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| | | | 2. Apply basic concepts to develop construction (drawing) techniques<br>3. Ability to manipulate drawings through editing and plotting techniques<br>4. Understand geometric construction<br>5. Produce template drawings<br>6. Produce 2D Orthographic Projections<br>7. Understand and demonstrate dimensioning concepts and techniques<br>8. Understand Section and Auxiliary Views<br>9. Become familiar with the use of Blocks, Design Center, and Tool Palettes<br>10. Become familiar with Solid Modeling concepts and techniques. |
| 42 | B. Sc. WT VI sem. | Industrial Engg. | 1.tudents must be Understand the Operation of Industry<br>2.Students must be Understand the Process of Work study<br>3.Students must be Understand the term of work measurements<br>4.Students must be Understand the Work measurements Techniques<br>5.Students must be Understand the Kaizen Techniques |
| 1 | B. Sc. RAC I sem. | Workshop Technology - I | After completion of the course, student will be able to:<br>1. Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.<br>2. Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.<br>3. Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.<br>4. Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch,<br>connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.<br>5. Ability to design and model various basic prototypes in the trade of Welding such as Lap joint, Lap Tee<br>joint, Edge joint, Butt joint and Corner joint. |

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| 2 | B. Sc. RAC I sem. | Workshop Technology – II | After completion of the course , student will be able to:<br><br>1. Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.<br>2. Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.<br>3. Ability to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.<br>4. Ability to perform various basic House Wiring techniques such as connecting one lamp with one switch,<br>connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.<br>5. Ability to design and model various basic prototypes in the trade of Welding such as Lap joint, Lap Tee<br>joint, Edge joint, Butt joint and Corner joint. |
| 3 | B. Sc. RAC I sem. | Electrical System | 1.Students will gain knowledge regarding the various laws and principles associated with electrical systems.<br>2. Students will gain knowledge regarding electrical machines and apply them for practical problems.<br>3. Students will gain knowledge regarding various types' semiconductors.<br>4. Student will gain knowledge digital electronics.<br>5. Student will gain knowledge on electronic systems. |
| 4 | B. Sc. RAC I sem. | Electronics System | 1. Students will gain knowledge regarding the various laws and principles associated with electrical systems.<br>2. Students will gain knowledge regarding electrical machines and apply them for practical problems.<br>3. Students will gain knowledge regarding various types' semiconductors.<br>4. Student will gain knowledge digital electronics.<br>5. Student will gain knowledge on electronic systems. |
| 5 | B. Sc. RAC I sem. | Computer Fundamental – I | The student after undergoing this course will be able to:<br>1. Demonstrate the use of mathematical software and solve simple mathematical problems.<br>2. Explain the needs of hardware and software required for a computation task.<br>3. State typical provisions of cyber law that govern the proper usage of Internet and computing resources. |

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| | | | 4. Explain the working of important application software and their use to perform any engineering activity.<br>5. Demonstrate the use of Operating system commands and shell script |
| 6 | B. Sc. RAC I sem. | Computer Fundamental – II | After successful completion of this course, students will be<br>1. Able to perform documentation and presenting skills.<br>2. Proficient in using Windows, Word Processing Applications, Spreadsheet Applications, Database Applications and Presentation Graphics Applications. |
| 7 | B. Sc. RAC I sem. | Communication Skills in English – I | 1. Students will be aware of basic language skills<br>2. Students will be able to read and write English<br>3. Students will understand the skills required for speaker and goof listener.<br>4. Students will confident for the application of English<br>5. Word power of the students will be developed. |
| 8 | B. Sc. RAC I sem. | Marathi | Will know the different Indian Sant and their writing materials. |
| 9 | B. Sc. RAC I sem. | Hindi | Will get knowledge about different stories from the Hindi writings. |
| 10 | B. Sc. RAC II sem. | Elements of Mechanical Engineering | 1. Understand concepts of energy, its sources and conversion.<br>2. Understand the basic concepts of thermodynamics.<br>3. Explain the fundamental concepts of properties of steam |
| 11 | B. Sc. RAC II sem. | Engineering Material | 1. Classify engineering materials based on their structure.<br>2. Draw crystallographic planes and directions.<br>3. Distinguish between elastic and plastic behavior of materials.<br>4. Distinguish between isomorphous and eutectic phase diagram.<br>5. Classify materials based on their electrical and magnetic properties.<br>6. Propose a solution to prevent corrosion. |
| 12 | B. Sc. RAC II sem. | Engineering Graphics - I | 1. To make use of drawing instruments effectively for drawing and dimensioning.<br>2. To understand the conventions and methods of engineering drawing.<br>3. To know the concept of projections of points, lines, planes, solids and section of solids.<br>4. To understand the Construction isometric and orthographic views of given objects. |

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| 13 | B. Sc. RAC II sem. | Engineering Graphics – II | Students will be able to:<br>5. Use of drawing instruments effectively for drawing and dimensioning.<br>6. Explain conventions and methods of engineering drawing.<br>7. Apply concept of projections of points, lines, planes, solids and section of solids.<br>8. Construct isometric and orthographic views of given objects |
| 14 | B. Sc. RAC II sem. | Engineering Mechanics - I | 1. To know and apply fundamental Laws of Engineering Mechanics<br>2. To know and apply Conditions of static equilibrium to analyze given force system<br>3. To compute Centre of gravity and Moment of Inertia of plane surfaces<br>4. To compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion<br>5. To know and discuss relation between force and motion characteristics |
| 15 | B. Sc. RAC II sem. | Engineering Mechanics - II | Students will be able to:<br>1. Apply fundamental Laws of Engineering Mechanics<br>2. Apply Conditions of static equilibrium to analyze given force system<br>3. Compute Centre of gravity and Moment of Inertia of plane surfaces<br>4. Compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion<br>5. Know and discuss relation between force and motion characteristics |
| 16 | B. Sc. RAC II sem. | Communication Skills in English – II | Students will be able to:<br>1. Knowledge about the different philosophers<br>2. Understand the poetry from different writers.<br>3. Able to use the grammar in their speaking and writing. |
| 17 | B. Sc. RAC II sem. | Marathi | Will learn the different Marathi writers and their writing material and works. |
| 18 | B. Sc. RAC II sem. | Hindi | Will get knowledge about the different Hindi writers. |
| 19 | B. Sc. RAC III sem. | Production Management | 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 |

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| | | | understand how to manage resources to achieve superior quality through statistical process control<br>2.understand the methods involved in forecasting demand explain how to design goods and services<br>3.describe the three major process strategies and capacity planning understand how to develop location strategies<br>4.review the importance of developing the proper layout strategy<br>5.explain the relationship between a successful human resources strategy and job design principle<br>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<br>7.Identify the principles involved in short-term scheduling explain and apply the principles of project management<br>8.Ddescribe the strategic importance of maintenance and reliability activities |
| 20 | B. Sc. RAC III sem. | Mechanical Measurement | 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.<br>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.<br>3. Apply the principles of instrumentation for transducers & measurement of non electrical parameters like temperature, pressure, flow, speed, force and stress in mechanical engineering applications for sustainable development.<br>4. Apply the principles of miscellaneous measurements for humidity, density, level and blood pressure. |
| 21 | B. Sc. RAC III sem. | Machine Drawing I | 1. Analysis of complex design systems related to mechanical Engineering.<br>2. Making use of appropriate laboratory tools and designing innovative methods.<br>3. To motivate students to develop new innovative methods for measuring product Characteristics.<br>4. To enhance the ability of students to work as teams. |

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| | | | 5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement |
| 22 | B. Sc. RAC III sem. | Applied Thermodynamics | At the end of the course students should be able to –<br>1.Apply thermodynamic laws for analysis of thermal systems.<br>2.Compare, select proper thermodynamic cycle for power conversion system under consideration.<br>3.Understand constructional details of 2S, 4S, SI/CI IC engine, Select suitable IC engine for the application.<br>4.Explain the need of inter cooling for a multi-stage compressor<br>5.Justify merits of nonconventional energy sources over conventional energy sources. |
| 23 | B. Sc. RAC III sem. | Hydraulics & Machines | 1. Students will be able to develop to gain basic knowledge on Fluid Statistics, Fluid Dynamics, closed conduit flows, hydro-electric power stations.<br>2. Students will be able to design various components of pumps and turbines and study their characteristics. |
| 24 | B. Sc. RAC III sem. | Air Conditioning System | At the end of the course student will be able to:<br>1.Apply thermodynamics to develop concepts for the psychometric.<br>2. Understand and apply various psychometric processes for air conditioning purposes.<br>3. Specify and calculate various parameters on a psychometric chart.<br>4. Calculate and specify various cooling and heating load calculations.<br>5. Develop brief understanding about the different air conditioning systems and their suitable applications. |
| 25 | B. Sc. RAC 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. |
| 26 | B. Sc. RAC IV sem. | Electrical Technology | 1.Understand the basic properties of electrical elements, and solve DC circuit analysis Problems. DC network theorems. |

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| | | | 2. Understand the fundamental behavior of AC circuits and solve circuit problems.<br>3. Apply the knowledge gained to explain the behavior of the circuit at series & parallel resonance of circuit & the effect of resonance.<br>4. Explain the basic properties of electromagnetic circuit & their application. |
| 27 | B. Sc. RAC IV sem. | Machine Drawing II | 1. Analysis of complex design systems related to mechanical Engineering.<br>2. Making use of appropriate laboratory tools and designing innovative methods.<br>3. To motivate students to develop new innovative methods for measuring product Characteristics.<br>4. To enhance the ability of students to work as teams.<br>5. Improving skills to adopt modern methods in mechanical engineering as continuous improvement |
| 28 | B. Sc. RAC IV sem. | Refrigeration system | At the end of the course student will be able to:<br>1. Understand and explain CoP and tonnage of refrigeration systems.<br>2. Arrange the various components of simple VCC in proper sequence.<br>3.Justify the need for a multi pressure system.<br>4. Explain the working and need of various components of the refrigeration system.<br>5.Explain various types of air refrigeration cycles and their applicability. |
| 29 | B. Sc. RAC IV sem. | Refrigeration Equipment | After studying this unit, you should be able to<br>1.Describe various types of compressor & its working operations<br>2.Describe various types of condenser & its working operations<br>3.Describe various types of evaporator & its working operations<br>4.Describe various types of expansion device & its working operations |
| 30 | B. Sc. RAC IV sem. | Air Conditioning equipment | 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. |
| 31 | B. Sc. RAC V sem. | EDP | 1. Understand the nature of entrepreneurship<br>2. Understand the function of the entrepreneur in the |

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| | | | successful, commercial application of innovations<br>3. Confirm an entrepreneurial business idea<br>4. Identify personal attributes that enable best use of entrepreneurial opportunities<br>5. Explore entrepreneurial leadership and management style. |
| 32 | B. Sc. RAC V sem. | Refrigerants | 1. Illustrate the fundamental principles and applications of refrigeration and air conditioning system<br>2. Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration systems<br>3. Present the properties, applications and environmental issues of different refrigerants<br>4. Calculate cooling load for air conditioning systems used for various<br>5. Operate and analyze the refrigeration and air conditioning systems. |
| 33 | B. Sc. RAC V sem. | Refrigeration & Air Conditioning material | 1. Know the concept, properties and types of insulating materials<br>2. Understand different cable and wiring used in the refrigerator and air conditioning system<br>3. Apply the knowledge of different material used in the components of refrigerator and air conditioning system<br>4. understand lubrication system used in the refrigerator and air conditioning system<br>5. Understand tubing material used in the refrigerator and air conditioning system. |
| 34 | B. Sc. RAC V sem. | Refrigeration & Air Conditioning Application | At the end of the course student will be able to:<br>1. Select and apply a proper RAC system among various as per the requirements.<br>2.Understand the requirements of food preservation and its various parameters.<br>3. Understand the requirements of industry.<br>4. Develop certain commercial applications.<br>5.Work in a small ice plant.<br>6.Develop refrigeration and air conditioning system for the transportation purpose. |
| 35 | B. Sc. RAC V sem. | Refrigeration & Air Conditioning piping system | Students will demonstrate an understanding thermal comfort conditions with respect to<br>1.Temperature and humidity and human clothing and activities and its impact on human comfort, productivity, and health. |

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| | | | 2. Develop understanding of the principles and practice and requirements of ventilation.<br>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. |
| 36 | B. Sc. RAC V sem. | Non conventional Refrigeration system | 1.Describe the properties of refrigerants and evaluate performance of the actual vapour compression refrigeration systems.<br>2. Evaluate the performance of compound vapour compression refrigeration systems for various applications.<br>3. Describe vapour absorption system for large cooling load application and evaluate its performance.<br>4. Explain working principles of non-conventional refrigeration systems and evaluate the performance of steam jet refrigeration system.<br>5. Compute cooling/heating loads for designing air conditioning systems for residential and commercial building.<br>6. Design the air duct systems for large commercial buildings. |
| 37 | B. Sc. RAC VI sem. | EDP II | Develop idea generation, creative and innovative skills<br>1. Aware of different opportunities and successful growth stories<br>2. Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business.<br>3.Understand the entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.<br>4. Run a small enterprise with small capital for a short period and experience the science and art of doing business. |
| 38 | B. Sc. RAC VI sem. | Refrigeration & Air Conditioning Maintenance | At the end of the course student will be able to:<br>1 Handle the various tools required for maintenance of RAC systems.<br>2. Prepare various pipe joints.<br>3. Develop and acquire various servicing techniques.<br>4. Handle installation of RAC systems.<br>5. Find and correct common electrical faults in the RAC system. |

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| | | | 6. Undertake maintenance of a small domestic refrigerator and AC system. |
| 39 | B. Sc. RAC VI sem. | Refrigeration & Air Conditioning Installation | 1.Illustrate the fundamental principles and applications of refrigeration and air conditioning system<br>2. Obtain cooling capacity and coefficient of performance by conducting test on vapors compression refrigeration systems<br>3. Present the properties, applications and environmental issues of different refrigerants<br>4. Calculate cooling load for air conditioning systems used for various<br>5. Operate and analyze the refrigeration and air conditioning systems |
| 40 | B. Sc. RAC VI sem. | Refrigeration & Air Conditioning standard | 1. Students must be Understand the Standards<br>2. Students must be Understand the Need of Standards<br>3. Students must be Understand the Classification of Refrigeration and Air conditioning Standard<br>4. Students must be Understand the National or International Standards<br>5. Students must be Understand the use of International Standards<br>6.Students must be Understand the Existing Standards Likes ISO,ICE,ECS<br>7.Students must be Understand the Procedure of standards Development<br>8.Students must be Understand the Different Level of Standards |
| 41 | B. Sc. RAC VI sem. | Selection of equipment and assembly | 1. Able to dismantle and assemble hermetic compressor & test performance.Selection of hermetic compressor for different appliances, starting methods, testing controls & safety cut out used in sealed compressor.<br>2. Servicing & descaling of Condenser used in different appliances (internals & externals)<br>3. Fitting & adjustment of drier, filter & refrigerant control used in different refrigeration systems.<br>4. Servicing of different evaporators used in different appliances.<br>5. Recovery and Recycling of Refrigerant used, alternative of CFC, HFC re-cover, transfer & handling of gas cylinders.<br>6. Retrofit CFC/HFC machine with ozone friendly refrigerant. |

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| | | | 7. Packing thermal insulation material and preventing cooling leakage.<br>8. Servicing and preventive maintenance of walk in cooler & Reach in cabinet.<br>9. Servicing and preventive maintenance of cold storage.<br>10. Fault diagnosis, servicing, leak test, evacuation, gas charging, check magnetic clutch and wiring of Car A.C. Test performance.<br>11. Servicing, dismantling, checking different parts, re-placing worn out parts, check lubrication system, Assembling & checking performance of commercial compressors.<br>12. Servicing of water cooled condensers<br>13. Servicing of cooling tower and performance test.<br>14. Service and maintenance of Ice plant/Candy |
| 42 | B. Sc. RAC VI sem. | Refrigeration & Air Conditioning safety | 1. Students must be Understand the Safety<br>2. Students must be Understand the Need of safety operations<br>3. Students must be Understand the Classification of Refrigeration and Air conditioning Standard safety job<br>4. Students must be Understand the safety of RAC engineers<br>5. Students must be Understand injury and prcations RAC |
| 1 | M.Sc. Cs I Sem | Constitution of India | Students will understand the constitution of India.<br>Students will know the constitutional and fundamental of rights. |
| 2 | M.Sc. Cs I Sem | Research Methodology | Critically analyze research methodologies identified in Existing literature.<br>Choose appropriate qualitative or quantitative method to collect data.<br>Propose and distinguish appropriate research design and methodologies to apply to a specific research project.<br>Develop a comprehensive research methodology for a research question.<br>Apply the understanding of feasibility and practicality of research methodology for a proposed project. |
| 3 | M.Sc. Cs I & II Sem | Java Group (Core Java and advanced Java) | Develop a basic program writing skill of the students.<br>Students will be able to select the technology trends.<br>Foundation for programming 2 and programming 3 |
| 4 | M.Sc. Cs I Sem | Microsoft Group (C++) | Students will able to:<br>Fundamentals of the CPP programming.<br>Can develop applications using the CPP. |

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| | | | Understand the exception and how to handle it.<br>Can communicate with files via cpp programming. |
| 5 | M.Sc. Cs I & II Sem | Open Group (Basic Python and Adv. Python) | Understand the basic concepts of python.<br>Can write basic programs using python data structures, handle python exception.<br>Will be able to communicate with the file system using python programming.<br>Students will be able to develop the web application , network programming using the python.<br>Should be able to develop standalone application with the python programming. |
| 6 | M.Sc. Cs I Sem | Introduction to Algorithm | Students will learn current and comprehensive introduction to the study of computer algorithm.<br>Implementation of complex data representation.<br>Make the estimation of the performance of the selection of the best suitable structures. |
| 7 | M.Sc. Cs I Sem | RDBMS | On completion of this course students will be able to<br>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.<br>2.use an SQL interface of a multi-user **relational DBMS** package to create, secure, populate, maintain, and query a database. |
| 8 | M.Sc. Cs II Sem | Mathematical Foundation and Statistical Method | Students are able to preform mathematical operation based on sets theory and statistical analysis.<br>The theoretical component of the course treats fundamental concepts, as well as some necessary topics in set theory and statistical analysis.<br>The practical component of courses addresses the computer implementation of these method |
| 9 | M.Sc. Cs I Sem | Modern Operating System | Students will able to:<br>1. Describe the important computer system resources and the role of operating systems in their management policies and algorithms.<br>2. Understand the process management policies and scheduling of processes by CPU<br>3. Evaluate the requirement for process synchronization and coordination handled by operating system<br>4. Describe and analyze the memory management and its allocation policies.<br>5. Identify use and evaluate the storage management policies with respect to different storage management technologies. |

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| | | | 6. Identify the need to create the special purpose operating system. |
| 10 | M.Sc. Cs II Sem | Technical Report Writing | Critically analizes research methodologies identified in existing literature.<br>Choose appropriate qualitative or quantitative method to collect data.<br>Propose and distinguish appropriate research design and methodologies to apply to a specific research project.<br>Develop a comprehensive research methodology for a research question.<br>Apply the understanding of feasibility and practicality of research methodology for a proposed project. |
| 11 | M.Sc. Cs II Sem | Microsoft Group (VB.Net) | Students can develop desktop application using the VB.Net language.<br>Will be able to use the Microsoft's Visual studio to develop different applications like, web, standalone, network, etc. |
| 12 | M.Sc. Cs II Sem | Data Communication | Will understand the data communication and networking, protocols and protocols suits.<br>Understand the exchange of data between directly connected devices, aspect of transmission, interfacing, link control, multiplexing.<br>Understand the architectural principals and mechanism required for exchange of data among computers workstations, servers and data processing devices. |
| 13 | M.Sc. Cs II Sem | Software Engineering | Students be able to analyze processing, draw actor interactions, and optimization processes.<br>Student decides process models, ensure proper software testing, versioning of software.<br>Student able to identify the cost of designed software products and services etc. |
| 14 | M.Sc. Cs II Sem | Elective 1 – Image Processing | Students will able to selects research verticals ranging from pattern analysis and machine intelligence, data science remote sensing and geospatial technology and sensor technology.<br>Will get expertise in elective 1.<br>Students will be able to apply the concepts for implementation of concepts for innovative products. |
| 15 | M.Sc. Cs II Sem | Elective I Fundamentals of satellite and remote sensing | Students understand the advantages, laws used in the field.<br>Understand the sensors and remote sensing satellites. |

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| 16 | M.Sc. Cs II Sem | Foundation of electronics | Students will understand the basics of electronics.<br>They can use the different components in the design of the models. |
| 17 | | Elective II Artificial Intelligence | Students will understand the basic concepts of Artificial Intelligence.<br>Students can identify the problem-solving algorithms in the AI.<br>Will be able to identify the selection of the algorithm to problem solving. |
| 18 | M.Sc. Cs II Sem | Elective II Machine Learning | Will understand the algorithmic models of learning model.<br>Students will understand the concepts of parameter estimation in machine learning.<br>Will understand the computational learning theory.<br>Students can visualize the data, can use reinforcement learning. |
| 19 | M.Sc. Cs II Sem | Elective II GIS | Understand the geospatial technology basics.<br>Can understand the data models used in the GIS. |
| 20 | M.Sc. Cs II Sem | Elective II Digital Signal Processing | Students will understand the basics of the signals.<br>Students will understand the signal sampling and techniques. |
| 21 | M.Sc. Cs III Sem | Programming 3 Android | Will able to write programs in different environment.<br>Students will be able to apply the advanced technology in building of the mobile applications. |
| 22 | M.Sc. Cs III Sem | Programming 3 C#.Net | Will be able to develop applications using C# language with the framework pf Microsoft.<br>Can develop any type of application with Visual Studio.<br>Understand the working of Visual Studio framework. |
| 23 | M.Sc. Cs III Sem | Programming 3 Open Web Programming | Students will understand the working of the HTML and its elements.<br>Will be understanding the CSS and styling the web page.<br>Orgnization of the web page content. |
| 24 | M.Sc. Cs III Sem | Compiler Design | Understanding the working of the compiler.<br>Will be able to Identify the grammar in the compiler.<br>Students will be able to identify the syntax analysis. |
| 25 | M.Sc. Cs III Sem | Computer Graphics | Students should able to make transformation, camera manipulation, frame buffer operations, etc.<br>Student will understand the basics of the lighting and shading, texture mapping.<br>Students will know the fundamentals of modelling and animation. |
| 26 | M.Sc. Cs III Sem | Elective 3 | At the end of this course, students will be able to:<br>1. Explain and compare a variety of pattern |

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| | | Pattern Recognition | classification, structural pattern recognition, and pattern classifier combination techniques.<br>2. Summarize, analyze, and relate research in the pattern recognition area verbally and in writing.<br>3. Apply performance evaluation methods for pattern recognition, and critique comparisons of techniques made in the research literature.<br>4. Apply pattern recognition techniques to real-world problems such as document analysis and recognition.<br>5. Implement simple pattern classifiers, classifier combinations, and structural pattern recognizers. |
| 27 | M.Sc. Cs III Sem | Elective 3 Data Warehousing | At the end of course students will have:<br>The design experience, software background, and organizational, context, that prepares you to succeed with data warehouse development projects.<br>Student will be able to create data warehouse designs and data integration workflow that satisfy the business intelligence need of organizations.<br>Evaluate an Orgnization for data warehouse maturity and business architecture alignment. |
| 28 | M.Sc. Cs III Sem | Elective 3 Remote sensing | Remote sensing data can be used efficiently and effectively.<br>Students able to classify, analyze and asses the remotely sensed data and able to design and develop remote sensing data analysis for various applications. |
| 29 | M.Sc. Cs III Sem | Elective 3 Micro Controller Programming | Student will be able to independently work on embedded system with 8051 and PIC Microcontrollers.<br>Electronic system design with 8051 microcontrollers<br>Electronic system design with PIC microcontrollers<br>Embedded coding with 8051 microcontrollers |
| 30 | M.Sc. Cs III Sem | Elective 4 Neural Network and Deep Learning | Students will be able to understand the major technology trends driving Deep learning.<br>Be able to build, train, and apply fully connected deep neural networks.<br>Understand the key parameters in a neural network's architecture. |
| 31 | M.Sc. Cs III Sem | Elective 4 Big Data analytics | The students will get knowledge of :<br>Data processing and data quality.<br>Modelling and design of data warehouses.<br>Write parallelize programs and use basic tools MPI and POSIX threads.<br>Apply core ideas behind parallel and distributed environment. |
| 32 | M.Sc. Cs III Sem | Elective 4 Hyperspectral | Able to describe multispectral and hyperspectral remote sensing. |

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| | | Image Processing | Ability to design and extract the thematic information.<br>Able to apply hyperspectral data in various field of applications. |
| 33 | M.Sc. Cs III Sem | Elective 4 Internet of Things | Understand what internet things are.<br>Controlling home appliances from anywhere in the world.<br>Use some of the physical devices like Arduino and Raspberry Pi.<br>Design some of the IoT applications. |
| 34 | M.Sc. Cs IV Sem | Industrial Internship/Field Work Projects/Research Projects | Capability to acquire and apply fundamental principles of Computer Science.<br>Become master in one's specialized technology.<br>Ability to communicate efficiently.<br>Capacity to be a multi-skilled computer science professional with good technical knowledge, management, leadership and entrepreneurship skills.<br>Ability to identify, formulate and model problems and find solution based on systems approach.<br>Capability and enthusiasm for self-improvement through continuous professional development and life-ling learning. |
| 35 | M.Sc. Cs IV Sem | Seminar | Ability to evaluate information and use and apply relevant theories.<br>Ability to organize and show competence in working with methodology, structuring their oral work, and synthesizing information.<br>Ability to deliver, and make use of visual, audio and audio-visual material to support their presentation.<br>Ability to speak cogently with or without notes and present and discuss either works as an individual. |
| 36 | M.Sc. Cs IV Sem | Intellectual property rights | The students once they complete their academic projects, shall get an adequate knowledge on parent and copyright for their innovative research works.<br>During their research career, information in patent documents provide useful insight on novelty of their idea form state-of-the art search. This provide further war for developing their idea or innovations.<br>Pave the way for the students to catch up Intellectual Property (IP) as a career option.<br>R&D IP Counsel.<br>Government Jobs – Patent Examiner<br>Private Jobs |
| 37 | M.Sc. Cs IV Sem | Development of soft skills and | Students will be able to learn new approach, planning and goal settings.<br>Understand the win win solution. |

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| | | personality developement | Will be able to identify the good and bad habits.<br>Will learn nonverbal communication skills.<br>Learn how to overcome the fear. |
| 38 | M.Sc. Cs IV Sem | R-Tools | Students will be able to use the R language.<br>Will be able to develop projects using the R language with the tools. |
| 39 | M.Sc. Cs IV Sem | Communication Skill | The students will be able to improve his writing and reading skills and will be having improved clarity of communication. |
| 40 | M.Sc. Cs IV Sem | Introduction to MATLAB | Students can develop good GUI based applications in MATLAB. |
| 1 | M.Sc. IT I Sem | OOPs Using C++ | Upon completion of this course, the students will be able to:<br>1.Understand the difference between the top-down and bottom-up approach<br>2.Apply the concepts of object-oriented programming<br>3.Demonstrate the use of various OOPs concepts with the help of programs.<br>4.Describe the concept of function overloading, operator overloading, and polymorphism.<br>5.Develop software in the C++ programming language, |
| 2 | M.Sc. IT I Sem | Constitution od India | Students will understand the constitution of India.<br>Students will know the constitutional and fundamental of rights. |
| | | Research Methodology | Critically analyze research methodologies identified in Existing literature.<br>Choose appropriate qualitative or quantitative method to collect data.<br>Propose and distinguish appropriate research design and methodologies to apply to a specific research project.<br>Develop a comprehensive research methodology for a research question.<br>Apply the understanding of feasibility and practicality of research methodology for a proposed project. |
| 3 | M.Sc. IT I & II Sem | Java Group (Core Java and advanced Java) | Develop a basic program writing skill of the students.<br>Students will be able to select the technology trends.<br>Foundation for programming 2 and programming 3 |
| 4 | M.Sc. IT I Sem | Microsoft Group (C++) | Students will able to:<br>Fundamentals of the CPP programming.<br>Can develop applications using the CPP.<br>Understand the exception and how to handle it.<br>Can communicate with files via cpp programming. |
| 5 | M.Sc. IT I & II Sem | Open Group (Basic Python | Understand the basic concepts of python. |

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| | | and Adv. Python) | Can write basic programs using python data structures, handle python exception.<br>Will be able to communicate with the file system using python programming.<br>Students will be able to develop the web application , network programming using the python.<br>Should be able to develop standalone application with the python programming. |
| 6 | M.Sc. IT I Sem | Introduction to Algorithm | Students will learn current and comprehensive introduction to the study of computer algorithm.<br>Implementation of complex data representation.<br>Make the estimation of the performance of the selection of the best suitable structures. |
| 7 | M.Sc. IT I Sem | Advanced Computer Network | Students can understand computer networking. They can create a setup of a network, internet and proxy server.<br>The students will be well acquainted with how computer network works, what are the architectures and protocols required for it, as well as some special topics. |
| 8 | M.Sc. IT II Sem | Technical Report Writing | Critically analyzes research methodologies identified in existing literature.<br>Choose appropriate qualitative or quantitative method to collect data.<br>Propose and distinguish appropriate research design and methodologies to apply to a specific research project.<br>Develop a comprehensive research methodology for a research question.<br>Apply the understanding of feasibility and practicality of research methodology for a proposed project. |
| 9 | M.Sc. IT II Sem | Microsoft Group (VB.Net) | Students can develop desktop application using the VB.Net language.<br>Will be able to use the Microsoft's Visual studio to develop different applications like, web, standalone, network, etc. |
| 10 | M.Sc. IT II Sem | RDBMS using SQL | On completion of this course students will be able to<br>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.<br>2.use an SQL interface of a multi-user **relational DBMS** package to create, secure, populate, maintain, and query a database. |

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| 11 | M.Sc. IT II Sem | Network Security | The main objective of this course is to learn various techniques to secure information while traveling through different communication mediums |
| 12 | M.Sc. IT II Sem | Fundamentals of Compiler Design | Fluency in describing the theory and practice of compilation, in particular, the lexical analysis, syntax,and semantic analysis, code generation and optimization phases of compilation.<br>Ability to create lexical rules and grammars for a programming language. |
| 13 | M.Sc. IT II Sem | Elective 1 GIS | Understand the geospatial technology basics.<br>Can understand the data models used in the GIS. |
| 14 | M.Sc. IT II Sem | Elective 1 Digital Image Processing | At the completion of the course the student have the preliminary knowledge about the image processing. |
| 15 | M.Sc. IT II Sem | Elective 1 Internet of Things | Understand what internet things are.<br>Controlling home appliances from anywhere in the world.<br>Use some of the physical devices like Arduino and Raspberry Pi.<br>Design some of the IoT applications. |
| 16 | M.Sc. IT III Sem | Web analysis and Development | At the end of the course, students will be able to develop dynamic websites using current tools and technologies.<br>They will be aware of some web analytics and different analytics tools. |
| 17 | M.Sc. IT III Sem | Artificial Intelligence | Students will understand the basic concepts of Artificial Intelligence.<br><br>Students can identify the problem-solving algorithms in the AI.<br><br>Will be able to identify the selection of the algorithm to problem solving. |
| 18 | M.Sc. IT III Sem | Advanced Software Engineering | Students will able to:<br>1. Define various software application domains and remember different process models used in software development.<br>2. Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques<br>. 3. Convert the requirements model into the design model and demonstrate use of software and user interface design principles. |

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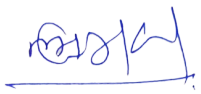
| 19 | M.Sc. IT III Sem | Cyber Forensic | Students will be able to get knowledge about the cyber forensic and understand the security points about the data in the digital world. |
| 20 | M.Sc. IT III Sem | Big Data Analytics | Data processing and data quality.<br>Modelling and design of data warehouses.<br>Write parallelize programs and use basic tools like MPI and POSIX threads. |
| 21 | M.Sc. IT III Sem | Geospatial Technology | At course completion students can go for research in remote sensing and GIS or work in industry allied in this field. |
| 22 | M.Sc. IT III Sem | Pattern Recognition | Students can go for research in Pattern Recognition.<br>Work in atomization industry. |
| 23 | M.Sc. IT III Sem | Cloud Computing | The learner will know the basics of the Cloud computing.<br>Learner will get favor of abstraction and virtualization for cloud. |
| 24 | M.Sc. IT IV Sem | Industrial Internship/Field Work Projects/Research Projects | Capability to acquire and apply fundamental principles of Computer Science.<br>Become master in one's specialized technology.<br>Ability to communicate efficiently.<br>Capacity to be a multi-skilled computer science professional with good technical knowledge, management, leadership and entrepreneurship skills.<br>Ability to identify, formulate and model problems and find solution based on systems approach.<br>Capability and enthusiasm for self-improvement through continuous professional development and life-ling learning. |
| 25 | M.Sc. IT IV Sem | Seminar | Ability to evaluate information and use and apply relevant theories.<br>Ability to organize and show competence in working with methodology, structuring their oral work, and synthesizing information.<br>Ability to deliver, and make use of visual, audio and audio-visual material to support their presentation.<br>Ability to speak cogently with or without notes and present and discuss either works as an individual. |



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M.I.T. Cidco, Aurangabad

*G.S. Mandal's*

# Marathwada Institute of Technology, CIDCO Aurangabad

# Course Outcomes (COs)

# Program Outcomes (POs)

# and

# Program Specific Outcomes (PSOs)

## 2022-2023

# Program Outcomes

## 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.
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

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M.I.T. Cidco, Aurangabad

*G.S. Mandal's*

# Marathwada Institute of Technology, CIDCO Aurangabad

# Course Outcomes (COs)

# Program Outcomes (POs)

# and

# Program Specific Outcomes (PSOs)

## 2022-2023

# POS (Program Specific Outcomes)

## 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.

PRINCIPAL
M.I.T. Cidco, Aurangabad