

Course Outcomes

Applied Mathematics I

1. Apply the concepts of complex numbers to the engineering problems.
2. Apply the knowledge of n th order derivatives of standard functions to engineering problems.
3. Apply the principles of basic operations of matrices to the engineering problems.
4. Apply the basic principles of partial differentiation to engineering problems.
5. Apply concepts of partial differentiation (maxima and minima, Jacobian), expansion of functions as an application of successive differentiation.
6. Apply SCILAB programming techniques to model problems based on solution of simultaneous linear algebraic equations.

Applied Physics I

1. Apply the concepts of crystallography and to use XRD techniques for analysis of crystal structure .
2. Apply the knowledge of Quantum mechanics to uncertainty principle and motion of free particle.
3. To comprehend the basic concepts of semiconductor physics and apply the same to electronic devices.
4. Apply the knowledge of superconductivity to SQUID and Magnetic levitation.
5. Apply the reasons for Acoustic defects and use this in the proper design of a Hall/Auditorium.
6. Use the knowledge of Piezoelectric and Magnetostriction effect for production of ultrasonic waves and its application in various fields.

Applied Chemistry I

1. Apply the knowledge of types of hardness of water and its estimation.
2. Apply the knowledge of various softening and disinfecting methods.
3. Apply the knowledge of various polymers, their synthesis, properties and uses along with their fabrication techniques.
4. Apply the knowledge of thermodynamics in studying different chemical systems in equilibrium obeying Gibb's phase rule.
5. Apply the knowledge of lubricants, types, properties and mechanisms to avoid frictional resistance.
6. Demonstrate the knowledge of Portland cement and carbon nanomaterials.

Applied Mathematics II

1. Apply the concepts of First Order and first degree Differential equation to the engineering problems.
2. Apply the concepts of Higher Order Linear Differential equation to the engineering problems.
3. Apply concepts of Beta and Gamma function to the engineering Problems.
4. Apply SCILAB programming techniques to solve differential equation to model complex engineering activities.
5. Apply concepts of Double integral of different coordinate systems to the engineering problems.
6. Apply concepts of triple integral of different coordinate systems to the engineering problems.

Applied Physics II

1. Comprehend principles of interference and diffraction.
2. Illustrate the principle, construction and working of various LASERs and its applications.
3. Identify various applications of optical fibres.
4. Comprehend the concepts of electrodynamics and Maxwell's equations and their use in telecommunication systems.
5. Apply the concepts of electromagnetism in focusing systems and CRO.
6. Comprehend the significance of nanoscience and nanotechnology, its applications.

Applied Chemistry II

1. Identify types of corrosion and factors affecting it related to problems affecting all industries.
2. Identify different types of corrosion control methods to study corrosion control in various industries.
3. Apply the knowledge of different types of fuels, including their production and refining methods and combustion mechanisms.
4. Illustrate composition and properties of different types of alloys and the process of powder metallurgy

Engineering Mechanics

1. Illustrate the concept of force, moment and apply the same along with the concept of equilibrium in two and three dimensional systems with the help of FBD.
2. Demonstrate the understanding of Centroid and its significance and locate the same.
3. Correlate real life application to specific type of friction and estimate required force to overcome friction.
4. Establish relation between velocity and acceleration of a particle and analyse the motion by plotting the relation
5. Illustrate different types of motions and establish Kinematic relations for a rigid body
6. Analyse body in motion using force and acceleration, work-energy, impulse-momentum principles

Basic Electrical Engineering

1. To evaluate D.C. circuits using network theorems.
2. To evaluate 1- Φ AC circuits.
3. To illustrate constructional features and operation of 1- Φ transformer.
4. To evaluate 3- Φ AC circuits.
5. To illustrate working principle of DC machines.
6. To conduct experiments on D.C. circuits and AC circuits.

Environment Studies

1. Illustrate Depleting Nature of Environmental Resources, Global Environmental Crisis, Ecosystem concept.
2. Adapt to 3R (Reuse, Recovery, Recycle).
3. Study different control measures related to Environmental Pollution.
4. Illustrate and analyse various Case Studies related to Environmental Legislation.
5. Demonstrate the working of Renewable energy sources & Equipments.
6. Illustrate the Techniques of Disaster Management and Green Building.

5. Illustrate principles of green chemistry.
6. Illustrate properties and applications of different types of composite materials.

Engineering Drawing

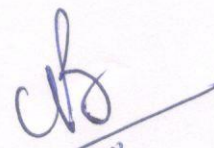
1. Apply the basic principles of projections in 2D drawings.
2. Apply the basic principles of projections in converting 3D view to 2D drawing.
3. Read a given drawing.
4. Visualize an object from the given two views.
5. Use CAD tool to draw different views of a 3D object.
6. Use CAD tool to draw an object in 3D.

Structured Programming Approach

1. Illustrate the basic terminology used in computer programming.
2. Illustrate the concept of data types, variables and operators using C.
3. Design and Implement control statements and looping constructs in C.
4. Apply function concept on problem statements.
5. Demonstrate the use of arrays, strings, structures and files handling in C.
6. Demonstrate the dynamics of memory by the use of pointers to construct various data structures.

Communication Skills

1. Understand and evaluate information they listen to and express their ideas with greater clarity
2. Speak and respond effectively along the various channels of communication in a business organization
3. Speak convincingly before an audience with the help of an expanded vocabulary and enhanced digital content
4. Read and summarize effectively
5. Communicate through result oriented writing both within and outside the organization.
6. Write a set of effective and easy to understand technical description, instructions and convey the same using global information technology

**Principal**Vidyalankar Institute of Technology
Antop Hill, Wadala (E), Mumbai-37.

Department of Information Technology (UG)

| SEM | SUBJECT | CODE | STATEMENTS |
|-----|-----------------------------|------|---|
| III | Applied Mathematics III | CO 1 | Students will be able to apply the Set theory and Relation concepts |
| | | CO 2 | Students will be able to apply the Functions and define the recursive functions |
| | | CO 3 | Students will be able to apply Laplace transform to different applications |
| | | CO 4 | Students will be able to apply Inverse Laplace transform to different applications |
| | | CO 5 | Students will be able to identify the permutations and combinations |
| | | CO 6 | Students will be able to define variable and also identify the mapping |
| | Logic Design | CO 1 | Students will be able to understand the concepts of various components to design stable analog circuit s |
| | | CO 2 | Students will be able to represent numbers and perform arithmetic operations |
| | | CO 3 | Students will be able to minimize the Boolean expression using Boolean algebra and design it using logic gates |
| | | CO 4 | Students will be able to analyze and design combinational circuit |
| | | CO 5 | Students will be able to design and develop sequential circuits |
| | | CO 6 | Students will be able to translate real world problems into digital logic formulations using VHDL |
| | Data Structures & Analysis | CO 1 | Students will be able to understand and remember algorithms and its analysis procedure. |
| | | CO 2 | Students will be able to introduce the concept of data structures through ADT including List, Stack, Queues |
| | | CO 3 | Students will be able to design and implement various data structure algorithms |
| | | CO 4 | Students will be able to introduce various techniques for representation of the data in the real world |
| | | CO 5 | Students will be able to develop application using data structure algorithms |
| | | CO 6 | Students will be able to compute the complexity of various algorithms |
| | Database Management Systems | CO 1 | Students will be able to explain the features of database management systems and Relational database |
| | | CO 2 | Students will be able to design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra |
| | | CO 3 | Students will be able to create and populate a RDBMS for a real life application, with constraints and keys, using SQL |
| | | CO 4 | Students will be able to retrieve any type of information from a data base by formulating complex queries in SQL |
| | | CO 5 | Students will be able to analyze the existing design of a database schema and apply concepts of normalization to design an optimal database |
| | | CO 6 | Students will be able to build indexing mechanisms for efficient retrieval of information from a database |
| | Principle of Communications | CO 1 | Students will be able to differentiate analog and digital communication systems |
| | | CO 2 | Students will be able to Identify different types of noise occurred, its minimization and able to apply Fourier analysis in frequency & time domain to quantify bandwidth requirement of variety of analog and digital communication systems. |
| | | CO 3 | Students will be able to design generation & detection AM, DSB, SSB, FM transmitter and receiver |
| | | CO 4 | Students will be able to apply sampling theorem to quantify the fundamental relationship between channel bandwidth,digital symbol rate and bit rate |

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| | | CO 5 | Students will be able to explain different types of line coding techniques for generation and detection of signals. |
| | | CO 6 | Students will be able to describe Electromagnetic Radiation and propagation of waves |
| | | | |
| IV | Applied Mathematics IV | CO 1 | Students will able to apply the Number Theory to different applications using theorem. |
| | | CO 2 | Students will able to apply probability and understand PDF. |
| | | CO 3 | Students will able to understand sampling theory and correlation. |
| | | CO 4 | Students will able to apply the graphs and trees concepts to different applications. |
| | | CO 5 | Students will able to understand group's theory |
| | | CO 6 | Students will able to understand the Lattice theory |
| | Computer Networks | CO 1 | Students will able to describe the functions of each layer in OSI and TCP/IP model |
| | | CO 2 | Students will able to explain the functions of Application layer and Presentation layer paradigms and Protocols |
| | | CO 3 | Students will able to describe the Session layer design issues and Transport layer services |
| | | CO 4 | Students will able to classify the routing protocols and analyze how to assign the IP addresses for the given network |
| | | CO 5 | Students will able to describe the functions of data link layer and explain the protocols |
| | | CO 6 | Students will able to explain the types of transmission media with real time applications. |
| | Operating System | CO 1 | Students will able to Describe the important computer system resources and the role of operating system in their management policies and algorithms. |
| | | CO 2 | Students will able to Understand the process management policies and scheduling of processes by CPU |
| | | CO 3 | Students will able to Evaluate the requirement for process synchronization and coordination handled by operating system |
| | | CO 4 | Students will able to Describe and analyze the memory management and its allocation policies. |
| | | CO 5 | Students will able to Identify use and evaluate the storage management policies with respect to different storage management technologies |
| | | CO 6 | Students will able to Identify the need to create the special purpose operating system. |
| | Computer Organization and Architecture | CO 1 | Students will able to describe basic organization of computer and the architecture of 8086 microprocessor |
| | | CO 2 | Students will able to Implement assembly language program for given task for 8086 microprocessor. |
| | | CO 3 | Students will able to Demonstrate control unit operations and conceptualize instruction level parallelism. |
| | | CO 4 | Students will able to Demonstrate and perform computer arithmetic operations on integer and real numbers. |
| | | CO 5 | Students will able to Categorize memory organization and explain the function of each element of a memory hierarchy. |
| | | CO 6 | Students will able to Identify and compare different methods for computer I/O mechanisms. |

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| | Automata Theory | CO 1 | Students will be able to understand, design, construct, analyze and interpret Regular languages, Expression and Grammars |
| | | CO 2 | Students will be able to design different types of Finite Automata and Machines as Acceptor, Verifier and Translator |
| | | CO 3 | Students will be able to understand, design, analyze and interpret Context Free languages, Expression and Grammars |
| | | CO 4 | Students will be able to design different types of Push down Automata as Simple Parser |
| | | CO 5 | Students will be able to design different types of Turing Machines as Acceptor, Verifier, Translator and Basic computing machine |
| | | CO 6 | Students will be able to compare, understand and analyze different languages, grammars, Automata and Machines and appreciate their power and convert Automata to Programs and Functions |
| V | Computer Graphics and Virtual Reality | CO1 | Students will be able to understand basic concepts of computer graphics. |
| | | CO2 | Students will be able to choose appropriate algorithm for line drawing, line clipping, polygon clipping and polygon filling. |
| | | CO3 | Students will be able to solve 2D and 3D Transformation problems. |
| | | CO4 | Students will be able to understand Virtual reality, the related technologies, and shall be able to describe applications of Virtual Reality. |
| | Operating Systems | CO1 | Students will be able to describe the main objectives and functions of operating system. |
| | | CO2 | Students will be able to determine the organization of PC components and various approaches for designing the operating system. |
| | | CO3 | Students will be able to examine how the operating system is responsible for managing the computer resources. |
| | | CO4 | Students will be able to evaluate how memory is managed using the memory management policies. |
| | Microcontroller and Embedded Systems | CO1 | Ability to understand basic structure of embedded systems |
| | | CO2 | Ability to understand basic structure of microcontrollers |
| | | CO3 | Ability to understand basic concepts used in embedded/operating systems |
| | | CO4 | Ability to program microcontroller |
| | | CO5 | Ability to design conceptual embedded system |
| | Advanced Database Management Systems | CO1 | Students will be able to Construct complex queries using SQL to retrieve and manipulate information in a database. |
| | | CO2 | Students will be able to Develop real life applications integrated with database systems. |
| | | CO3 | Students will be able to Apply security controls to avoid any type of security incidents on vital database systems |
| | | CO4 | Students will be able to Design advanced data systems using Object based systems or Distributing databases for better resource management |
| | Open Source Technologies | CO1 | Students will be able to analyze system requirements during the installation of Open Source Operating System |
| | | CO2 | Students will be able to demonstrate essential open source tools to configure and |

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| | | | run server services in Linux |
| | | CO3 | Students will be able to develop Android application on Linux platform |
| | | CO4 | Students will be able to develop modules of Operating System using Shell Programming |
| | Business Communication and Ethics | CO1 | Students will be able to prepare the elements of technical writing such as proposals, reports and meeting documentation. |
| | | CO2 | Students will be able to develop and demonstrate analytical and interpersonal skills, confidence and the ability to appreciate diverse perspectives in social and professional settings. |
| | | CO3 | Students will be able to demonstrate awareness of professional and social ethics and etiquettes, values and responsibilities and contemporary issues. |
| | | CO4 | Students will be able to utilize the communication and employment skills acquired for developing engineering solutions, for success in placements and career and for life-long learning. |
| VI | Software Engineering | CO1 | Students will be able to Meet the Information Technology Program Objectives of identifying and solving engineering problems |
| | | CO2 | Students will be able to understand principles, concepts, methods, and techniques of the software engineering approach to producing quality software for large, complex systems. |
| | | CO3 | Students will be able to function effectively as a member of a team engaged in technical work. |
| | | CO4 | Students will be able to think critically about ethical and social issues in software engineering for different applications |
| | Distributed Systems | CO1 | Students will gain clear understanding of fundamental principles of Distributed Systems along with design and implementation of key mechanisms, Clock Synchronization, Election Algorithms, Mutual Exclusion, Message Communication, Process and Resource Scheduling etc. |
| | | CO2 | Student will understand the message communication, remote procedure call and Remote method invocation (RPC and RMI) along with group communication. |
| | | CO3 | Students are emphasized on developing applications using current distributed computing technologies like EJB, CORBA and .NET. |
| | | CO4 | Students will able to develop/design distributed system/applications for an enterprise using SOA. |
| | System and Web Security | CO1 | Differentiate between authentication and authorization; |
| | | CO2 | Explain the basic idea behind access control and compare the various access control policies and models. |
| | | CO3 | Explain the need for security protocols in the context of use with Internet-based Applications. |
| | | CO4 | Explain the basic idea behind firewalls and intrusion detection systems and how they work. |
| | Data Mining and Business Intelligence | CO1 | Student will be able to demonstrate an understanding of the importance of data mining and the principles of Business Intelligence. |
| | | CO2 | Student will be able to able to prepare the data needed for data mining algorithms in terms of attributes and class inputs, training, validating, and testing files. |
| | | CO3 | Student will be able to implement the appropriate data mining methods like |

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| | | | classification, clustering or association mining on large data sets. |
| | | CO4 | Student will be able to define and apply metrics to measure the performance of various data mining algorithms. |
| | | CO5 | Student will be able to apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise apply the appropriate data mining technique, interpret and visualize the results and provide decision support. |
| | Advance Internet Technology | CO1 | |
| | | CO2 | |
| | | CO3 | Students will be able to demonstrate amazon/ google or yahoo mashup |
| | | CO4 | Students will be able understand concepts in SEO |
| | | | |
| VII | Software Project Management | CO1 | Students will be able to recall the reasons for Software Project failures. Remember |
| | | CO2 | Students will be able to initiate new software project. Apply |
| | | CO3 | Students will be able to develop work break down structure. Analyze |
| | | CO4 | Students will be able to produce software project management Plan. Create |
| | Cloud Computing | CO1 | Students should be able to differentiate different computing techniques |
| | | CO2 | Students should be able to compare various cloud computing providers/software. |
| | | CO3 | Students should be able to handle Open Source cloud implementation and administration |
| | | CO4 | Students should be able to understand risks involved in cloud computing |
| | Intelligent System | CO1 | Students will develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents. |
| | | CO2 | Students will be able to choose an appropriate problem-solving method and knowledge-representation scheme. |
| | | CO3 | Students will develop an ability to plan and formalize the problem |
| | | CO4 | Students will be able to develop/demonstrate/ build simple intelligent systems or classical toy problems using different AI techniques |
| | Wireless Technology | CO1 | Students will be able to understand the new trends and characteristics of mobile/wireless communications networks |
| | | CO2 | Students will be able to understand the multiple radio access techniques and multiuser detection techniques |
| | | CO3 | Students will be able to understand various wireless networks and their technologies |
| | | CO4 | Students will be able to understand need of securities and economies in wireless systems |
| | | CO5 | Students will be able to simulate methods for real world problems in implementing wireless solution |
| | Elective - I(Ecommerce and E business) | CO1 | Students will be able to analyse and interpret the technological, user, network requirements for developing the various modules of e commerce/business site |
| | | CO2 | Students will be able to apply the knowledge gained and modern engineering tools in their application domain |
| | | CO3 | Students will be able to Identify the e-business model and the various strategies involved with e-business and e-commerce |
| | | CO4 | Students will be able to Apply e-payment and e-marketing along with promotional strategies. |
| | | CO5 | Students will be able to understand navigation flow , information flow to develop |

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| | | | ecommerce and e-business website |
| VIII | Storage Network Management and Retrieval | CO1 | Students will be able to understand logical and physical components of a storage infrastructure and identify components of managing and monitoring the data centre |
| | | CO2 | Students will be able to evaluate storage architectures, including storage subsystems, SAN, NAS, and IP-SAN also define backup recovery |
| | | CO3 | Examine emerging technologies including IP-SAN |
| | | CO4 | Define information retrieval in storage network and identify different storage virtualization technologies |
| | Big Data Analytics | CO1 | Understand the key issues in big data management and its associated applications in intelligent business and scientific computing |
| | | CO2 | Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. |
| | | CO3 | Interpret business models and scientific computing paradigms, and apply software tools for big data analytics. |
| | | CO4 | Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc. |
| | Computer Simulation and Modeling | CO1 | Students will be able to understand the meaning of simulation and its importance in business, science, engineering, industry and services. |
| | | CO2 | Students will be able to analyze events and inter-arrival time, arrival process, queuing strategies, resources and disposal of entities . |
| | | CO3 | Students will be able to define random variate generators for finite random variables . |
| | | CO4 | Students will be able to analyze and fit the collected data to different distributions. |
| | Elective -II: STQA | CO1 | Students will be able to identify the reasons for bugs and analyse the principles in software testing to prevent and remove bugs. |
| | | CO2 | Students will be able to Implement various test processes for quality improvement |
| | | CO3 | Students will be able to apply the software testing techniques in commercial environments |
| | | CO4 | Students will be able to provide practical knowledge of a variety of ways to test software and an understanding of some of the trade-offs between testing techniques |
| | | CO5 | Students will be familiar with the open source testing tools |

Department of Computer Engineering (UG)

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|-----|---|------------------|---|
| III | Applied Mathematics III | CSC 301.1 | Understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic function. |
| | | CSC 301.2 | Plot the image of the curve by a complex transformation from z-plane to w-plane. |
| | | CSC 301.3 | Expand the periodic function by using Fourier series and complex form of Fourier series. |
| | | CSC 301.4 | Understand the concept of Laplace transform and inverse Laplace transform of various functions and its application to solve ordinary differential equations. |
| | | CSC 301.5 | Apply the concept of Z- transformation and its inverse of the given sequence. |
| | | CSC 301.6 | Apply the concept of Correlation and Regression to the engineering problems. |
| | Digital Logic Design and Analysis | CSC 302.1 | To understand different number systems and their conversions. |
| | | CSC 302.2 | To analyze and minimize Boolean expressions. |
| | | CSC 302.3 | To design and analyze combinational circuits. |
| | | CSC 302.4 | To design and analyze sequential circuits |
| | | CSC 302.5 | To understand the basic concepts of VHDL. |
| | Discrete Mathematics (DIM) | CSC303.1 | Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving. |
| | | CSC303.2 | Ability to reason logically. |
| | | CSC303.3 | Ability to understand relations, Diagraph and lattice. |
| | | CSC303.4 | Ability to understand use of functions, graphs and their use in programming applications. |
| | | CSC303.5 | Understand use of groups and codes in Encoding-Decoding |
| | | CSC303.6 | Apply discrete structures into other computing problems such as formal specification, verification, artificial intelligence, cryptography, Data Analysis and Data Mining etc. |
| | Electronic Circuits and Communication Fundamentals (ECCF) | CSC304.1 | To understand the use of semiconductor devices in circuits and analyze them. |
| | | CSC304.2 | To understand importance of oscillators and power amplifiers in communication system. |
| | | CSC304.3 | To understand basic concepts of operational amplifier and their applications. |
| | | CSC304.4 | To understand the fundamental concepts of electronic communication |
| | | CSC304.5 | To apply knowledge of electronic devices and circuits to communication applications. |
| | | CSC304.6 | To study basic concepts of information theory. |
| | Data Structures (DS) | CSC 305.1 | Students will be able to implement various linear and nonlinear data structures. |
| | | CSC 305.2 | Students will be able to handle operations like insertion, deletion, searching |

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| | | | and traversing on various data structures. |
| | | CSC 305.3 | Students will be able to select appropriate sorting technique for given problem. |
| | | CSC 305.4 | Students will be able to select appropriate searching technique for given problem. |
| | | CSC 305.5 | Students will be able to apply the learned concepts in various domains like DBMS and Compiler Construction. |
| | | CSC 305.6 | Students will be able to choose appropriate data structure for specified problem domain. |
| | | Digital System Lab | CSL 301.1 |
| | CSL 302.2 | | Understand the principles of design of combinational logic and sequential logic circuits using basic components. |
| | CSL 303.3 | | Recognize the importance of digital systems in computer architecture. |
| | CSL 303.4 | | Design and simulate the basic digital circuit. |
| | Basic Electronics Lab | CSL 302.1 | Understand the basics of various semiconductor devices, electronic components and instruments. |
| | | CSL 302.2 | Understand the working of electronic circuits using components |
| | | CSL 302.3 | Recognize the importance of electronic circuits in electronic communications. |
| | | CSL 302.4 | Study the fundamental concepts of various modulation methods |
| | Data structure Lab | CSL 303.1 | Students will be able to implement various linear and nonlinear data structures. |
| | | CSL 303.2 | Students will be able to handle operations like insertion, deletion, searching and traversing on various data structures. |
| | OOPM(Java) Lab | CSL 304.1 | To apply fundamental programming constructs. |
| | | CSL 304.2 | To illustrate the concept of packages, classes and objects. |
| | | CSL 304.3 | To elaborate the concept of strings, arrays and vectors. |
| | | CSL 304.4 | To implement the concept of inheritance and interfaces. |
| | | CSL 304.5 | To implement the notion of exception handling and multithreading. |
| | | CSL 304.6 | To develop GUI based application. |
| IV | Applied Mathematics IV | CSC 401.1 | Students in this course will be able to apply the method of solving complex integration, computing residues & evaluate various contour integrals. |
| | | CSC 401.2 | Demonstrate ability to manipulate matrices and compute Eigen values and Eigen vectors. |
| | | CSC 401.3 | Apply the concept of probability distribution to the engineering problems. |
| | | CSC 401.4 | Apply the concept of sampling theory to the engineering problems. |
| | | CSC 401.5 | Use matrix algebra with its specific rules to solve the system of linear equation, using concept of Eigen value and Eigen vector to the engineering problems. |
| | | CSC 401.6 | Apply the concept of Linear & Non-Linear Programming Problem to the engineering problems. |

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| | Analysis of Algorithm (AOA) | CSC 402.1 | Analyze the running time and space complexity of algorithms. |
| | | CSC 402.2 | Describe, apply and analyze the complexity of divide and conquer strategy. |
| | | CSC 402.3 | Describe, apply and analyze the complexity of greedy strategy. |
| | | CSC 402.4 | Describe, apply and analyze the complexity of dynamic programming strategy. |
| | | CSC 402.5 | Explain and apply backtracking, branch and bound and string matching techniques to deal with some hard problems. |
| | | CSC 402.6 | Describe the classes P, NP, and NP-Complete and be able to prove that a certain problem is NP-Complete. |
| | Computer Organization and Architecture (COA) | CSC 403.1 | To describe basic structure of the computer system. |
| | | CSC 403.2 | To demonstrate the arithmetic algorithms for solving ALU operations. |
| | | CSC 403.3 | To describe instruction level parallelism and hazards in typical processor pipelines. |
| | | CSC 403.4 | To describe superscalar architectures, multi-core architecture and their advantages |
| | | CSC 403.5 | To demonstrate the memory mapping techniques. |
| | | CSC 403.6 | To Identify various types of buses, interrupts and I/O operations in a computer system |
| | Computer Graphics (CG) | CSC 404.1 | Understand the basic concepts of Computer Graphics. |
| | | CSC 404.2 | Demonstrate various algorithms for scan conversion and filling of basic objects and their comparative analysis. |
| | | CSC 404.3 | Apply geometric transformations, viewing and clipping on graphical objects. |
| | | CSC 404.4 | Explore solid model representation techniques and projections. |
| | | CSC 404.5 | Understand visible surface detection techniques and illumination models. |
| | Operating System (OS) | CSC 405.1 | Understand role of Operating System in terms of process, memory, file and I/O management. |
| | | CSC 405.1 | Apply and analyse the concept of a process, thread, mutual exclusion and deadlock. |
| | | CSC 405.1 | Evaluate performance of process scheduling algorithms and IPC. |
| | | CSC 405.1 | Apply and analyse the concepts of memory management techniques. |
| | | CSC 405.1 | Evaluate the performance of memory allocation and replacement techniques. |
| | | CSC 405.1 | Apply and analyze different techniques of file and I/O management. |
| | Analysis of Algorithms Lab | CSL 401.1 | Analyze the complexities of various problems in different domains. |
| | | CSL 401.2 | Prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains. |
| | | CSL 401.3 | Develop the efficient algorithms for the new problem with suitable designing techniques. |
| | | CSL 401.4 | Implement the algorithms using different strategies. |
| Computer Graphics Lab | CSL 402.1 | Explore the working principle, utility of various input/ output devices and graphical tools. | |
| | CSL 402.2 | Implement various output and filled area primitive algorithms using C/ OpenGL | |
| | CSL 402.3 | Apply transformation and clipping algorithms on graphical objects. | |

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| | | CSL 402.4 | Implementation of curve and fractal generation. | |
| | | CSL 402.5 | Develop a Graphical application based on learned concept. | |
| | Processor Architecture Lab | CSL 403.1 | Assemble personal computer | |
| | | CSL 403.2 | Design the basic building blocks of a computer: arithmetic-logic unit, registers, central processing unit, and memory. | |
| | | CSL 403.3 | Implement various algorithms like Booth's algorithm for arithmetic operations | |
| | | CSL 403.4 | Describe various I/O buses with merits and demerits. | |
| | | CSL 404.1 | Understand basic operating system commands. | |
| | Operating System Lab | CSL 404.2 | Understand and explore various system calls. | |
| | | CSL 404.3 | Write shell scripts and shell commands using kernel APIs. | |
| | | CSL 404.4 | Implement and analyze different process scheduling algorithms | |
| | | CSL 404.5 | Implement and analyze different memory management algorithms. | |
| | | CSL 404.6 | Evaluate process management techniques and deadlock handling using simulator. | |
| | | Open Source Tech Lab | CSL 405.1 | To understand basic concepts in python and perl. |
| | CSL 405.2 | | To explore contents of files, directories and text processing with python | |
| | CSL 405.3 | | To develop program for data structure using built in functions in python. | |
| | CSL 405.4 | | To explore django web framework for developing python based web application. | |
| | CSL 405.5 | | To understand file handling and database handling using perl. | |
| | CSL 405.6 | | To explore basics of two way communication between client and server using python and perl. | |
| | V | Microprocessor (MP) | CSC 501.1 | Use TASM to develop assembly language program. |
| | | | CSC 501.2 | Design 8086 based microprocessor system. |
| | | | CSC 501.3 | Demonstrate the new protection mechanism and superscalar architecture. |
| CSC 501.4 | | | Choose processor with appropriate architecture. | |
| CSC 501.5 | | | Compare between multicore processors. | |
| Operating System (OS) | | CSC 502.1 | Identify different functions or services provided by general operating system. | |
| | | CSC 502.2 | Demonstrate scheduling algorithms like FCFS, SJF, priority and RR on various processes. | |
| | | CSC 502.3 | Compare different disk scheduling algorithms. | |
| | | CSC 502.4 | Choose appropriate solution if deadlock occurs. | |
| Structured and Object Oriented Analysis and Design (SOOAD) | | CSC 503.1 | Identity Requirements for a software system. | |
| | | CSC 503.2 | Prepare the system Proposal for Software System. | |
| | | CSC 503.3 | Develop and Document DFD for the required software systems. | |
| | | CSC 503.4 | Design different diagrams using Object oriented approach. | |
| | | CSC 503.5 | Design a database and user interface for any given software System. | |
| Computer Networks (CN) | | CSC 504.1 | Understand the functionalities of each layer in network architecture. | |
| | | CSC 504.2 | Understand the significance of protocol and the issues that are addressed. | |
| | | CSC 504.3 | Identify the configurations for a router and analyse the protocols in network. | |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | Business Communication and Ethics (BCE) | CSC 504.4 | Understand the significance of network management and related issues. |
| | | CPL 502.1 | Participate and contribute your views confidently during group discussions, meetings and interviews. |
| | | CPL 502.2 | Design slides and your style of presentations has improved. |
| | | CPL 502.3 | Understand the importance of effective interpersonal skills and professional ethics & etiquettes in life & career. |
| | | CPL 502.4 | Draft reports and proposals. |
| VI | System Programming and Compiler Construction (SPCC) | CPC 601.1 | Compare different types of system software. |
| | | CPC 601.2 | Use of different tool for translation of program from user friendly environment to system specific commands. |
| | | CPC 601.3 | Analyse number of phases, determine number of passes and compare different implementation. |
| | | CPC 601.4 | Develop LEX/ YACC tool based on rules of the software (such as RE, CFL). |
| | | CPC 601.5 | Apply optimization principles on given code. |
| | | CPC 601.6 | Prepare macros, which are required to improve readability and productivity. |
| | Software Engineering (SE) | CPC 602.1 | Develop and estimate and schedule for required software project. |
| | | CPC 602.2 | Identify and assess different risks in the software project. |
| | | CPC 602.3 | Design and develop high Quality software Application. |
| | | CPC 602.4 | Test and validate the developed projects for quality. |
| | Distributed Database (DDBMS) | CPC 603.1 | Analyse the business requirements and Propose a conceptual Distributed DB Design. |
| | | CPC 603.2 | Revise the DB Design by applying the Distributed concepts. |
| | | CPC 603.3 | Implement the distributed database design using the concept of fragmentation and replication. |
| | | CPC 603.4 | Formulate the queries to Fetch/Update the data on multiple sites. |
| | | CPC 603.5 | Estimating the cost of distributed Queries by converting it in to algebraic form. |
| | | CPC 603.6 | Compare different deadlock methods and concurrency control techniques. |
| | Mobile Communication and Computing (MCC) | CPC 604.1 | Explain GSM and CDMA cellular architecture. |
| | | CPC 604.2 | Categorize the functions of communication system for TCP/IP layers. |
| | | CPC 604.3 | Correlate TCP/IP stack with the wireless stack. |
| | | CPC 604.4 | Develop Mobile applications using J2ME, Android and WML Platforms. |
| | | CPC 604.5 | Evaluate and test various wireless networks and protocols using open source simulation tools like NS2. |
| | Software Project Management (SPM) | CPC 6012.1 | Define and describe their basic knowledge in Software Project management. |
| | | CPC 6012.2 | Identify and apply the key phases of Software project management to solve real time systems. |
| | | CPC 6012.3 | Evaluate software project for closure. |
| | | CPC 6012.4 | Design project plan, risk mitigation plan, various reports and system diagrams for the Software Project in a group. |
| | | CPC 6012.5 | Demonstrate their software project management ideas in front of group and peers. |
| | Germal Language (GL) | CPC 6013.1 | Read and understand simple German Text. |
| | | CPC 6013.2 | Describe basic family structure and work culture. |
| CPC 6013.3 | | Draft e-mails and create simple presentations. | |
| CPC 6013.5 | | Culturally and socially attuned to the European civilization. | |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | Operation Research | | |
| | Networking Programming Laboratory (NPL) | CPL 601.1 | Understand and implement the basic networking commands. |
| | | CPL 601.2 | Configure Linux router and edit routing tables. |
| | | CPL 601.3 | Develop networking projects. |
| | | CPL 601.4 | Design a network with FTP, WEB and DNS server. |
| | | CPL 601.5 | Designing TCP, UDP, Iterative and Concurrent Client-Server Programming. |
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| VII | Digital Signal Processing (DSP) | CPC701.1 | Understand the concept of Discrete Time signals and demonstrate signal manipulation by applying those concepts. |
| | | CPC701.2 | Perform time domain analysis of various DT systems. |
| | | CPC701.3 | Analyze system using various FFT flow-graphs and Fast DSP algorithms. |
| | | CPC701.4 | Design systems for Real Time Signal Processing Applications using DSP. |
| | | CPC701.5 | Solve real world engineering problems by applying DSP concepts. |
| | Cryptography and System Security (CSS) | CPC702.1 | Describe security goals, threats and vulnerabilities. |
| | | CPC702.2 | Describe various cryptography and authentication techniques. |
| | | CPC702.3 | Choose appropriate solution to specific security challenges. |
| | | CPC702.4 | Implement the cryptographic algorithms. |
| | Artificial Intelligence (AI) | CPC703.1 | Understand structure of Agents. |
| | | CPC703.2 | Understand about searching technique. |
| | | CPC703.3 | Use quantifier operators. |
| | | CPC703.4 | Familiar with block world problem. |
| | | CPC703.5 | Understand decision tree. |
| | Soft Computing (SC) | CPE7042X.1 | Describe soft computing techniques and their roles in building intelligent machines. |
| | | CPE7042X.2 | Demonstrate fuzzy logic and reasoning to handle uncertainty and solve engineering problems. |
| | | CPE7042X.3 | Compare different learning types and understand their uses for training the neural network. |
| | | CPE7042X.4 | Capable of designing problems using genetic algorithm. |
| | Enterprise Resource Planning and Supply Chain Management (ERP SCM) | CPE7042X.1 | Describe the technologies behind ERP and SCM for an organization. |
| | | CPE7042X.2 | Analyse mathematical model of SCM. |
| | | CPE7042X.3 | Identify implementation strategy for ERP and SCM. |
| | | CPE7042X.4 | Use the open source tool for integrating the business modules required for an ERP system. |
| | Image Processing (IP) | CPE7042X.1 | Understand the basic concepts of Digital Image processing. |
| | | CPE7042X.2 | Explain image enhancement and Segmentation techniques. |
| | | CPE7042X.3 | Develop fast image transform flowgraph. |
| | | CPE7042X.4 | Solve Image compression and decompression. |
| | | CPE7042X.5 | Perform various binary morphological image operations. |
| | Networks Threats and Attacks Laboratory | CPL701.1 | Use the network analysis commands and tools like nmap , wireshark to analyse the network , website or domain. |
| | | CPL701.2 | Prevent any system from spoofing attack or buffer overflow attack using tools like arpwatc. |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | (NTAL) | CPL701.3 | Identify and fetch proper solution for the vulnerability of your network using nessus. |
| | | CPL701.4 | Install and use SNORT for Detecting Intrusion. |
| | | CPL701.4 | Define rules using iptables to set up firewall. |
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| VIII | Data Warehouse and Mining (DWM) | CPC801.1 | Understand and implement classical algorithms in Data mining. |
| | | CPC801.2 | Identify strengths and weaknesses of algorithms learned and will be able to utilize for solving real world problems. |
| | | CPC801.3 | Learn Data Mining techniques as well as methods for integrating & interpreting the data sets. |
| | | CPC801.4 | Apply knowledge gained in Data ware Housing to improve effectiveness and efficiency of data analysis. |
| | Human Machine Interaction (HMI) | CPC802.1 | Stress the importance of a good interface design. |
| | | CPC802.2 | Understand the importance of human psychology in designing good interfaces. |
| | | CPC802.3 | Apply HMI in their day – to – day activities. |
| | | CPC802.4 | Build innovative applications that are user friendly. |
| | | CPC802.5 | Indulge into research in Machine Interface Design. |
| | Parallel and Distributed Systems (PDS) | CPC803.1 | Apply the principles and concept in analysing and designing the parallel and distributed system. |
| | | CPC803.2 | Reason about ways to parallelize problems. |
| | | CPC803.3 | Gain an appreciation on the challenges and opportunities faced by parallel and distributed systems. |
| | | CPC803.4 | Understand the middleware technologies that support distributed applications such as RPC, RMI and object based middleware. |
| | | CPC803.5 | Improve the performance and reliability of distributed and parallel programs. |
| | Digital Forensic (DF) | CPP803X.1 | Select the procedures for identification, preservation and extraction of electric evidence, auditing and investigation of network and host system intrusions, analysis and documentation of information gathered, and preparation of expert testimonial evidence. |
| | | CPP803X.2 | Classify the different types of digital evidences. |
| | | CPP803X.3 | Apply various forensic tools and resources for system administrators and information system security officers. |
| | | CPP803X.4 | Determine various cybercrime and its preventions methods. |
| | Big Data Analytics (BDA) | CPP803X.1 | Understand the key issues in big data management and its associated applications in intelligent business and scientific computing. |
| | | CPP803X.2 | Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. |
| | | CPP803X.3 | Interpret business models and scientific computing paradigms, and apply software tools for big data analytics. |
| | | CPP803X.4 | Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications. |
| | Machine Learning (ML) | CPP803X.1 | Understand Machine learning techniques. |
| | | CPP803X.2 | Identify strengths and weaknesses of regression, classification and clustering algorithms. |
| | | CPP803X.3 | Learn Supervised and unsupervised learning. |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | CPP803X.4 | Apply dimensionality reduction techniques to improve effectiveness and efficiency of data analysis. |
| | | CPP803X.5 | Understand Viterbi algorithm. |
| | Cloud Computing Laboratory (CCL) | CPL801.1 | Appreciate cloud architecture. |
| | | CPL801.2 | Create and run virtual machine on open source OS. |
| | | CPL801.3 | Implement infrastructure, storage as service. |
| | | CPL801.4 | Install and appreciate security features for cloud. |

Department of Electronics Engineering (UG)

| SEM | SUBJECT | CODE | STATEMENTS |
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| III | AM-III | ELX 301.1 | Students will be able demonstrate basic knowledge of Laplace Transform. Fourier series, Bessel Functions, Vector Algebra and Complex Variable. |
| | | ELX 301.2 | Students will be able to identify and model the problems in the field of Electronics and Telecommunication Engineering with feasible and practical solution. |
| | | ELX 301.3 | Students will be able to apply the application of Mathematics in Electronics and Telecommunication Engineering |
| | EDC-I | ELX 302.1 | Students will be able to explain working of semiconductor devices. |
| | | ELX 302.2 | Students will be able to analyse characteristics of semiconductor devices |
| | | ELX 302.3 | Students will be able to perform DC and AC analysis of Electronics circuits. |
| | | ELX 302.4 | Students will be able to compare various biasing circuits as well as various configurations of BJT, JFET and MOSFETs. |
| | | ELX 302.5 | Students will be able to select best circuit for the given specifications/application. |
| | | ELX 302.6 | Students will be able to design electronics circuits for given specifications. |
| | DCD | ELX 303.1 | Students will be able to perform various logical and arithmetic operations various number systems as well as conversion of one representation to another. |
| | | ELX 303.2 | Students will be able to apply Boolean algebra for the implementation and minimization of logic functions. |
| | | ELX 303.3 | Students will be , design and implement combinational logic circuits. |
| | | ELX 303.4 | Students will be able to differentiate between logic families TTL and CMOS. |
| | | ELX 303.5 | Students will be able to , design and implement sequential logic circuits. |
| | ENAS | ELX 304.1 | Students will be able to apply their understanding of network theorems in analysing complex circuits. |
| | | ELX 304.2 | Students will be able to evaluate the time and frequency response of electrical circuits and thereby understand the behaviour of electrical networks. |
| | | ELX 304.3 | Students will be able to evaluate the inter-relationship among various circuit parameters and solve complex networks using these parameters. |
| | | ELX 304.4 | Students will be able to synthesize electrical networks for a given network function and design simple filters. |
| | EIM | ELX 305.1 | Students will be able to describe the static & Dynamic Characteristics of an instrument, components of general instrumentation system & different types of error in the measurement process |
| | | ELX 305.2 | Students will be able to analyse various test & measuring instruments including AC |

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| | | | & DC bridges. | |
| | | ELX 305.3 | Students will be able to use CRO to perform wide range of simple & complex measurement functions for voltage, current, frequency, phase & component testing. | |
| | | ELX 305.4 | Students will be able to select choice of transducer for practical & real life applications based on their principle of operation, working, construction & characteristics. | |
| | OOPM | ELXL 304.1 | To apply basic programming knowledge. | |
| | | ELXL 304.2 | To illustrate the concept of classes, objects and demonstrate use of basic java packages. | |
| | | ELXL 304.3 | To elaborate the concept of strings, arrays, vectors and wrapper class. | |
| | | ELXL 304.4 | To implement the concept of inheritance and interfaces. | |
| | | ELXL 304.5 | To analyse concept of exception handling and multithreading. | |
| | | ELXL 304.6 | To develop GUI based application. | |
| | IV | AM-III | ELX 401.1 | Students will demonstrate basic knowledge of Calculus of variation, Vector Spaces, Matrix Theory, Random Variables, Probability Distributions, Correlation and Complex Integration. |
| | | | ELX 401.2 | Students will demonstrate an ability to identify and Model the problems in the field of Electronics and Telecommunication and solve it. |
| ELX 401.3 | | | Students will be able to apply the application of Mathematics in Telecommunication Engineering. | |
| EDC-II | | ELX 402.1 | Students will be able to Ability to understand amplifiers through frequency response. | |
| | | ELX 402.2 | Students will be able to perform DC and Ac analysis of single stage and multistage amplifiers, oscillators, differential amplifiers and power amplifiers | |
| | | ELX 402.3 | Students will be able to derive expression for performance parameters in terms of circuit and device parameters. | |
| | | ELX 402.4 | Student will be able to select appropriate circuit for given specifications/applications. | |
| | | ELX 402.5 | Students will be able to explain working and construction details of special, semiconductor devices. | |
| MPP | | ELX 403.1 | Students will be able to understand and explain 16-bit microprocessor architecture. | |
| | | ELX 403.2 | Students will be able to understand and write programmes for 8086 microprocessor. | |
| | | ELX 403.3 | Students will be able to use various peripheral devices to design Single Board Computer(SBC). | |
| | | ELX 403.4 | Students will be able to understand and explain 32-bit microprocessor architecture. | |
| DSD | | ELX 404.1 | Students will be able to design and implement synchronous sequential logic circuits. | |
| | | ELX 404.2 | Students will be able to analyse various types of digital logic circuits | |
| | | ELX 404.3 | Students will be able to understand engineering concepts in the design of digital circuits | |
| | | ELX 404.4 | Students will be able to understand the role of hardware description languages in digital circuit implementation | |

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| | | ELX 404.5 | Students will be able to describe simple hardware functions using a hardware description language |
| | | ELX 404.6 | Students will be able to understand the purpose of and steps involved in digital circuit implementation using Field-Programmable Gate Arrays. |
| | PEC | ELX 405.1 | Students will be able to comprehend the need for various components in analog communication systems. |
| | | ELX 405.2 | Students will be able to analyse various analog modulation methods. |
| | | ELX 405.3 | Students will be able to design modulators, demodulators for amplitude and frequency modulated systems. |
| | | ELX 405.4 | Students will be able to assess the characteristics of pulse modulation techniques. |
| | | ELX 405.5 | Recognize the need for multiplexing techniques. |
| | LCS | ELX 406.1 | Students will be able to understand the basic concepts of control system and identify control systems in real life applications. |
| | | ELX 406.2 | Students will be able to derive the mathematical model of different types of control systems and represent them in various forms. |
| | | ELX 406.3 | Students will be able to systems using time domain analysis techniques. |
| | | ELX 406.4 | Students will be able to apply concepts of frequency domain techniques in stability analysis of control systems |
| | | ELX 406.5 | Students will be able to create state variable models of systems and their controllability, observability and time response. |
| ELX 406.6 | | Students will be able to identify controllers and compensators in controllers. | |
| V | MCA | EXC501.1 | Student will be able to describe components, parts and operation of a microcontroller based system. |
| | | EXC501.2 | Student will be able to explain microcontroller architecture and usages of the instruction set of the respective microcontrollers. |
| | | EXC501.3 | Student will be able to practice microcontroller application programs on software simulation and on hardware microcontroller boards. |
| | | EXC501.4 | Student will be able to develop system based on microcontroller to solve real life problems |
| | DLIC | EXC 502.1 | Students will be able to demonstrate an understanding of fundamentals of Integrated Circuits. |
| | | EXC 502.2 | Students will be able to analyse the various applications and circuits based on a particular Linear Integrated Circuit |
| | | EXC 502.3 | Students will be able to select and use an appropriate Integrated Circuit to build a given application. |
| | | EXC 502.4 | Students will be able to design an application with the use of Integrated Circuit. |
| | EME | EXC503.1 | To understand basic laws of electro-statics and magneto-statics in vector form. |
| | | EXC503.2 | To understand parameters of various electromagnetics mediums, using Maxwell's Equations to relate the propagation of wave in different mediums like dielectric and conducting media. |
| | | EXC503.3 | To understand & calculate energy of electromagnetic waves using Poynting theorem and related phenomena. |

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| | | EXC503.4 | To Analyse and solve electromagnetic problems using different numerical methods by theoretical and simulation approach. |
| | | EXC503.5 | To extend the students relate and demonstrate different types of propagations of the waves with antennas. |
| | SS | EXC501.1 | Students will be able to differentiate between Continuous and Discrete Time signals and system. |
| | | EXC501.2 | Students will be able to analyse magnitude and phase responses of various periodic and aperiodic signals. |
| | | EXC501.3 | Students will be able to evaluate time domain and frequency domain analysis of the system. |
| | | EXC501.4 | Students will be able to correlate signals with itself and with other signals |
| | DCOM | EXC505.1 | Students will be able to model communication channel. |
| | | EXC505.2 | Students will be to validate the data compression methods for optimum use of bandwidth |
| | | EXC505.3 | Students will be able to choose a modulation technique for enhanced transmission efficiency |
| | | EXC505.4 | Students will be able to compare different modulation techniques based on bandwidth and power |
| EXC505.5 | | Students will be able to determine the technique to combat transmission impairments. | |
| Mini Project-1 | EXL504.1 | Learning additional skills | |
| | EXL504.2 | Development of ability to define and design the problem and lead to its accomplishment with proper planning | |
| | EXL504.3 | Learn the behavioural science by working in a group | |
| VI | BVLSI | EXC 601.1 | Demonstrate a clear understanding of choice of technology and technology scaling |
| | | EXC 601.2 | Design MOS based circuits |
| | | EXC 601.3 | Realize logic circuits with different design styles |
| | | EXC 601.4 | Demonstrate a clear understanding of system level design issues such as protection, timing and power dissipation |
| | | EXC 601.5 | Demonstrate an understanding of different types of SRAM , DRAM and flash memories and Arithmetic Circuits. |
| | AIS | EXC602.1 | Students will be able to recognize the basic pneumatic and hydraulic system components and understand their function as a part of industrial process |
| | | EXC602.2 | Students will understand basic principles of process parameter transmission, and conversion of process parameters to electrical and other form or vice versa. |
| | | EXC602.3 | Students will get familiar with control system components like positioner, actuator, valves etc. and use these components while designing process control loops for industry. |
| | | EXC602.4 | Students will be able to choose the type of controller for any specific process control application and determine the tuning parameters for that specific controller. |
| | CO | EXC 603.1 | Students will be able to explain working of a computer |
| | | EXC 603.2 | Student will be able to illustrate different algorithms for integer arithmetic calculations inside ALU |

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| | | EXC 603.3 | Students will be able to explain different memory management and I/O organization techniques |
| | | EXC 603.4 | Students will be able to determine performance of different replacement algorithms used in the memories |
| | | EXC 603.5 | Students will be able to illustrate different design strategies for a CPU |
| | PE-1 | EXC604.1 | Discuss Tradeoffs involved in different power electronic devices. |
| | | EXC604.2 | different types of rectifier, chopper and inverter circuits |
| | | EXC604.3 | Differentiate various types of controlled rectifiers using software simulation. |
| | DSPP | EXC605.1 | Students will be able to select digital filter according to requirement. |
| | | EXC605.2 | Students will be able to design different types of IIR and FIR digital filters |
| | | EXC605.3 | Students will be able to magnitude and phase response of LTI system in Digital domain |
| | | EXC605.4 | Students will able to describe the effect of hardware limitation |
| | | EXC605.5 | Students will be able to explain need and applications of DSP processors |
| | MITM | EXC606.1 | Student will be able to understand the basis of Information Technology and its application in abusiness environment |
| | | EXC606.2 | Student will Compare production tools, Various protocols which run the business infrastructure system and business system mangement. |
| | | EXC606.3 | Student will be able to importance of IT tools in content management |
| | Mini Project- II | ETL603.1 | Contribution, understanding and knowledge gained about the task completed by learning additional skills |
| ETL603.2 | | Development of ability to define and design the problem and lead to its accomplishment with proper planning | |
| ETL603.3 | | Learn the behavioural science by working in a group | |
| VII | ESD | EXC701.1 | Differentiate challenges in developing Embedded Systems |
| | | EXC701.2 | Design microcontroller based systems |
| | | EXC701.3 | Develop assembly language program |
| | | EXC701.4 | Use ARM-7 instruction set |
| | ICT | EXC702.1 | demonstrate a clear understanding of CMOS fabrication flow and technology scaling |
| | | EXC702.2 | demonstrate a clear understanding of various MOS fabrication processes, semiconductor measurements, packaging, testing and advanced semiconductor technologies |
| | | EXC702.3 | discuss physical mechanisms in novel devices like FinFETs, Nanowires and Graphene based devices |
| | | EXC702.4 | verify processes and device characteristics via simulations |
| | PE-2 | EXC703.1 | students will be able to design basic CMOS circuits with layout |
| | | EXC703.2 | Carry out the theoretical analysis of the power electronic systems from the 'Systems Theory' point of view. |
| | | EXC703.3 | Appreciate the ubiquity of power electronics systems in engineering fields |

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| | | EXC703.4 | Simulate and power electronic systems |
| | CCN | EXC 704.1 | Understand the fundamentals of communication and Computer networks. |
| | | EXC 704.2 | Have the capability of designing and analysing data transmission protocols and data link control Protocols |
| | | EXC 704.3 | Able to discuss major trends in industry and current research activities within the discipline. |
| | | EXC 704.4 | Able to implement networking protocols using TCP/IP based on socket programming. |
| | DIP | EXC7051.1 | Select appropriate algorithms to enhance the image quality. |
| | | EXC7051.2 | Choose appropriate filter to enhance image quality and apply histogram equalization |
| | | EXC7051.3 | the effect of different transforms on image in the frequency domain |
| | | EXC7051.4 | Calculate gray level values for gray level slicing, threshold value to obtain binary image, compression ratio, shape number, chain code |
| | | EXC7051.5 | Develop higher level image processing algorithms using the concepts of spatial and frequency domain |
| | OFC | EXC7054.1 | Apply the fundamental principles of optics to design cost effective system. |
| | | EXC7054.2 | Evaluate performance of FTTH system by using fundamental concepts of optical network. |
| | | EXC7054.3 | Establish long distance optical link by analyzing the transmission characteristics of fiber. |
| | | EXC7054.4 | Design reliable and cost effective system by modifying dispersion properties of fiber. |
| | | EXC7054.5 | Upgrade the bandwidth of optical system by applying principle of dispersion compensation |
| | Project- I | EXC706.1 | Learning additional skills |
| | | EXC706.2 | Development of ability to define, design, analysis and implementation of the problem and lead to its accomplishment with proper planning |
| | | EXC706.3 | Learn the behavioural science by working in a group |
| | | EXC706.4 | Selection of project area with emphasis on higher education and employment/ self employment |
| | | EXC706.5 | Provide opportunity to learn different computational techniques as well as some model development |
| VIII | CMOS | EXC801.1 | Students will be able to discuss trade-offs involved in analog VLSI Circuits |
| | | EXC801.2 | Students will be able to analyse building blocks of CMOS analog VLSI circuits. |
| | | EXC801.3 | Students will be able to design building blocks of CMOS analog VLSI circuits. |
| | | EXC801.4 | Students will be able to carry out verifications of issues involved in analog circuits via simulations. |
| | ANT | EXC802.1 | Analyse the performance of networks. |
| | | EXC802.2 | Determine the network performance using monitor tools |
| | | EXC802.3 | Set up WLAN,PAN |
| | | EXC802.4 | Explain optical networking technology |
| | MEMS | EXC803.1 | Students will be able to understand underlying fundamental principles of MEMS |

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| | | | devices. |
| | | EXC803.2 | Students will be able to design and simulate MEMS devices and system using standard simulation tools. |
| | | EXC803.3 | Students will be able to develop different concepts of micro system sensors and actuators for real-world applications. |
| | ROBOTICS | EXC8041.1 | Students will be able to describe kinematics and dynamics of stationary and mobile robots |
| | | EXC8041.2 | Students will be able to describe trajectory planning for robots |
| | | EXC8041.3 | Students will be able to implement trajectory generation and path planning various algorithms |
| | | EXC8041.4 | Students will be able to work in inter disciplinary projects |
| | MC | EXC8042.1 | Understand the fundamentals of mobile communications |
| | | EXC8042.2 | Differentiate between GSM and CDMA |
| | | EXC8042.3 | Understand the evolving wireless communication technologies. |
| | | EXC8042.4 | Understand the requirement of 4 G technology |
| | DCS | EXC8043.1 | Students will be able to differentiate between analog and digital control and importance of digital control |
| | | EXC8043.2 | Student will be able to the digital control systems |
| | | EXC8043.3 | Students will be able to design digital controllers |
| | Project- II | EXC806.1 | Contribution, understanding and knowledge gained from the project by learning additional skills. |
| | | EXC806.2 | Development of ability to define, design, analysis and implementation of the problem and lead to its accomplishment with proper planning |
| | | EXC806.3 | Learn the behavioural science by working in a group |
| | | EXC806.4 | Provide opportunity to learn different computational techniques as well as some model development |

Department of Electronics & Telecommunication Engineering (UG)

| SEM | SUBJECT | CODE | STATEMENTS |
|---------------------------|-------------------------------------|--|---|
| | Applied Mathematics-III | CO1 | Student will able to learn the basic Knowledge of Laplace Transformation and its applications. |
| | | CO2 | Student will able to understand the basics of Fourier series, Fourier Integral & Fourier transform. |
| | | CO3 | Student will able to evaluate their mathematical ideas for solving various properties of Vector Differentiation |
| | | CO4 | Student will develop ability for understanding the basics of complex Variable. |
| | | CO5 | To build ability to solve problems of various type of Properties of Bessel function |
| | Applied Mathematics-III TUT | CO1 | Student will able to learn the basic Knowledge of Laplace Transformation and its applications. |
| | | CO2 | Student will able to understand the basics of Fourier series, Fourier Integral & Fourier transform. |
| | | CO3 | Student will able to evaluate their mathematical ideas for solving various properties of Vector Differentiation |
| | | CO4 | Student will develop ability for understanding the basics of complex Variable. |
| | | CO5 | To build ability to solve problems of various type of Properties of Bessel function |
| | Electronic Devices & Circuits-I | CO1 | Understand the current voltage characteristics of semiconductor devices |
| | | CO2 | Analyze DC circuits and relate AC models of semiconductor devices with their physical operation |
| | | CO3 | Analyzing and implementing various biasing techniques for BJTs, JFETs. |
| | | CO4 | Designing and implementing various amplifiers using BJTs and JFETs |
| | | CO5 | Evaluate low and high frequency response to understand behavior of amplifiers. |
| | Electronic Devices & Circuits-I Lab | CO1 | Designing and implementing various application using rectifying diode |
| | | CO2 | Verifying and plotting characteristics of active devices like BJTs and JFETs |
| | | CO3 | Plotting the frequency response of various amplifiers using BJTs and JFETs |
| | | CO3 | Plotting the frequency response of various amplifiers using BJTs and JFETs |
| | Digital System Design | CO1 | Develop a digital logic and apply it to solve real life problems. |
| CO2 | | Analyze, design and implement combinational logic circuits. | |
| CO3 | | Classify different semiconductor memories. | |
| CO4 | | Analyze, design and implement sequential logic circuits. | |
| CO5 | | Analyze digital system design using PLD. | |
| CO6 | | Simulate and implement combinational and sequential circuits using VHDL systems. | |
| Digital System Design Lab | CO1 | Develop a digital logic and apply it to solve real life problems. | |
| | CO2 | Analyze, design and implement combinational logic circuits. | |
| | CO3 | Classify different semiconductor memories. | |

| SEM | SUBJECT | CODE | STATEMENTS |
|-----|---|------|---|
| | Circuit Theory & Networks | CO4 | Analyze, design and implement sequential logic circuits. |
| | | CO5 | Analyze digital system design using PLD. |
| | | CO6 | Simulate and implement combinational and sequential circuits using VHDL systems. |
| | | CO1 | Students will be able to apply mathematical knowledge in analyzing circuits by using network theorems. |
| | | CO2 | Students will be able to Estimate the response of a given circuit for different inputs by using time domain and frequency domain methods. |
| | | CO3 | Students will be analyzing complex circuits by using graph theory. |
| | Circuit Theory & Networks TUT | CO4 | Students will be able to understand and determine various parameters and network functions of passive two port networks |
| | | CO5 | Students will be able to Compare various methods of network synthesis and synthesize network functions. |
| | | CO1 | Students will be able to apply mathematical knowledge in analyzing circuits by using network theorems. |
| | | CO2 | Students will be able to Estimate the response of a given circuit for different inputs by using time domain and frequency domain methods. |
| | | CO3 | Students will be analyzing complex circuits by using graph theory. |
| | Electronic Instrumentation & Controls | CO4 | Students will be able to understand and determine various parameters and network functions of passive two port networks |
| | | CO5 | Students will be able to Compare various methods of network synthesis and synthesize network functions. |
| | | CO1 | Students will be able to explain principle of operation for various sensors |
| | | CO2 | Students will be able to describe functional blocks of data acquisition system |
| | | CO3 | Students will be able to find transfer functions for given system |
| | Object Oriented Programming using java laboratory | CO4 | Students will be able to calculate time domain and frequency domain parameter for given system |
| | | CO5 | Students will be able to predict stability of given system using appropriate criteria |
| | | CO1 | Students will be able to code a program using JAVA constructs. |
| | | CO2 | Students will be able to understand fundamental features of an object oriented language: object classes and interfaces, exceptions and libraries of object collections. |
| IV | Applied Mathematics-IV | CO3 | Students will be able to develop a program that efficiently implements the algorithm for given tasks. |
| | | CO4 | Students will be able to utilize the knowledge acquired in this course to develop higher level algorithms. |
| | | CO1 | Student will able to Learn the basics of calculus of variation and its applications |
| | | CO2 | Student will able to understand the basics of vector spaces. |
| | | CO3 | Student will able to evaluate their mathematical ideas for solving various properties of matrices and eigenvectors. |
| | | CO4 | Student will develop ability for understanding the basics of complex integration |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | Applied Mathematics-IV Tut | CO5 | Student will able to understand the basics of Normal Poisson, Binomial distribution, and Correlation |
| | | CO1 | Student will able to Learn the basics of calculus of variation and its applications |
| | | CO2 | Student will able to understand the basics of vector spaces. |
| | | CO3 | Student will able to evaluate their mathematical ideas for solving various properties of matrices and eigenvectors. |
| | | CO4 | Student will develop ability for understanding the basics of complex integration |
| | | CO5 | Student will able to understand the basics of Normal Poisson, Binomial distribution, and Correlation |
| | Electronic Devices & Circuits-II | CO1 | Understanding, working and characteristics of MOSFET and analyzing various amplifier circuit using MOSFET |
| | | CO2 | Analyzing and designing various types of cascade amplifiers using BJT and MOSFET |
| | | CO3 | To study analyze and design various types of power amplifier circuit using BJT |
| | | CO4 | Understanding and evaluating various types of negative feedback using amplifier circuits |
| | | CO5 | Analyzing and designing various types of low and high frequency oscillator circuits. |
| | Electronic Devices & Circuits-II Lab | CO1 | Understanding, working and characteristics of MOSFET and analyzing various amplifier circuit using MOSFET |
| | | CO2 | Analyzing and designing various types of cascade amplifiers using BJT and MOSFET |
| | | CO3 | To study analyze and design various types of power amplifier circuit using BJT |
| | | CO4 | Understanding and evaluating various types of negative feedback using amplifier circuits |
| | | CO5 | Analyzing and designing various types of low and high frequency oscillator circuits. |
| | Signals & Systems | CO1 | Students will be able to identify different types of signals and systems and model the LTI systems in the time domain. |
| | | CO2 | Students will be able to apply frequency domain analysis technique to continuous time LTI system. |
| | | CO3 | Students will be able understand the Z-transform & Discrete time Fourier transform to analyze the LTI discrete time systems. |
| | | CO4 | Students will be able to understand the concept of State Space analysis which can be used for analysis of systems. |
| | | CO5 | Students will be able to understand the applications of Laplace transform, z-transform and Fourier transform in electronics and communication systems. |
| | Signals & Systems-Tut | CO1 | Students will be able to identify different types of signals and systems and model the LTI systems in the time domain. |
| | | CO2 | Students will be able to apply frequency domain analysis technique to continuous time LTI system. |

| SEM | SUBJECT | CODE | STATEMENTS | |
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| | | CO3 | Students will be able understand the Z-transform & Discrete time Fourier transform to analyze the LTI discrete time systems. | |
| | | CO4 | Students will be able to understand the concept of State Space analysis which can be used for analysis of systems. | |
| | | CO5 | Students will be able to understand the applications of Laplace transform, z-transform and Fourier transform in electronics and communication systems. | |
| | | Linear Integrated Circuits | CO1 | Students will be able to interpret different op-amp parameters for designing op-amp based circuits. |
| | | | CO2 | Students will able to analyze and design various linear and non-linear applications of op-amp. |
| | CO3 | | Students will be able to select and use an appropriate ADC and DAC to build a given application | |
| | CO4 | | Students will be able to discuss the working and applications of various special purpose IC's. | |
| | CO5 | | Students will be able to design basic DC Power supply circuits using DC voltage regulator. | |
| | Linear Integrated Circuits-Lab | CO1 | Students will be able to interpret different op-amp parameters for designing op-amp based circuits. | |
| | | CO2 | Students will able to analyze and design various linear and non-linear applications of op-amp. | |
| | | CO3 | Students will be able to select and use an appropriate ADC and DAC to build a given application | |
| | | CO4 | Students will be able to discuss the working and applications of various special purpose IC's. | |
| | | CO5 | Students will be able to design basic DC Power supply circuits using DC voltage regulator. | |
| | Principles of Communication Engineering | CO1 | To apply different modulation and demodulation techniques used in analog communication | |
| | | CO2 | To identify and solve basic communication problems | |
| | | CO3 | To analyze transmitter and receiver circuits | |
| | | CO4 | To compare and contrast design issues, advantages, disadvantages and limitations of analog communication systems | |
| | Principles of Communication Engineering -Lab | CO1 | To analyze and visualize mathematical models of pulsed analog signal modelling | |
| | | CO2 | To analyze modulation/demodulation processes of various modulation technique | |
| | | CO3 | To analyze transmitter and receiver of various communication systems | |
| CO4 | | Apply communication concepts to circuit level | | |
| | | | | |
| V | Microcontroller and Applications MCA | CO1 | Students will be able to determine significance of microcontroller in embedded system | |
| | | CO2 | Students will be able illustrate different parts of microcontroller | |
| | | CO3 | Students will be able to use assembly language instructions effectively in microcontroller applications | |
| | | CO4 | Students will be able to illustrate design of simple embedded system based on microcontroller | |
| | | CO5 | Students will be able to compare different architecture level parameters of | |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | | microprocessor and microcontroller |
| | Radio Frequency and Antenna Modeling RFMA | CO1 | Student will be able to evaluate the performance of RF systems by understanding design challenges of Radio frequency circuits |
| | | CO2 | Student will be able to design RF filter by using lumped elements and stub lines |
| | | CO3 | Student will be able to understand the radiation mechanism of Antenna to implement Wireless systems. |
| | | CO4 | Student will be able to analyze and compare performance of different types of antennas |
| | | CO5 | Student will be able to design and simulate different antennas for communication applications |
| | Analog Communication AC | CO1 | Students will be able to Identify various types of noise which will be used for analysis of basic communication systems |
| | | CO2 | Students will be able to Analyze different modulation and demodulation techniques used in analog communication which will be used for various types of communication |
| | | CO3 | Students will be able to Analyze various types of Radio Receivers which will be used for communication |
| | | CO4 | Students will be able to Analyze sampling theorem and sampling techniques which will be used in digital communication |
| | | CO5 | Students will be able to Compare and contrast types of Pulse modulations which will be used in digital communication |
| | Random Signal Analysis RSA | CO1 | Students will be able to apply probability concepts to analyze communication systems |
| | | CO2 | Students will be able to determine type of distribution to apply communication applications |
| | | CO3 | Students will be able to Evaluate communication systems by using statistical Averages |
| | | CO4 | Students will be able to Analyze different Random process and sequence of random variable. |
| | | CO5 | Students will be able to predict the power spectral density and cross power spectral density of random signals of various communication systems. |
| | Integrated Circuits IC | CO1 | Students will be able to interpret different op-amp parameters for designing op-amp based circuits |
| | | CO2 | Students will be able to analyze and Design various linear applications of op-amp |
| | | CO3 | Students will be able to demonstrate various non-linear applications of op-amp |
| | | CO4 | Students will be able to discuss the working and applications of various special purpose IC's |
| | | CO5 | Students will be able to design basic DC Power supply circuits using DC voltage regulator |
| | Business Communication and Ethics BCE | CO1 | Communicate effectively in both verbal and written form and demonstrate knowledge of professional and ethical responsibilities. |
| | | CO2 | Participate and succeed in Campus placements and competitive examinations like GATE, CET. |
| | | CO3 | Possess entrepreneurial approach and ability for life-long learning. |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | CO4 | Have education necessary for understanding the impact of engineering solutions on Society and demonstrate awareness of contemporary issues. |
| | | CO5 | Draft the elements of technical writing such as proposals, reports and meeting documentation. |
| | | CO6 | Develop analytical and interpersonal skills, confidence and the ability to appreciate diverse perspectives in social and professional settings. |
| | Microcontroller and Application Laboratory (MCA-LAB) | CO1 | Students will be able to use different software tools for microcontroller applications |
| | | CO2 | Students will be able to use and configure different hardware tools for microcontroller based applications |
| | | CO3 | Students will be able to demonstrate interfacing of simple Input and output devices with microcontroller |
| | | CO4 | Students will be able to demonstrate application of different components of a microcontroller |
| | | CO5 | Students will be able to demonstrate simulation of simple microcontroller applications in embedded system |
| | Communication Engineering lab-I | CO1 | Students will be able to analyze performance of different analog modulation techniques |
| | | CO2 | Students will be able to demonstrate sampling techniques |
| | | CO3 | Students will be able to compare various pulse modulation schemes used for data transmission |
| | | CO4 | Students will be able to demonstrate design and working of various FM circuits |
| | | CO5 | Students will be able to experiment multiplexing techniques which will be used for various communication systems |
| | | CO6 | Students will be able to simulate various modulation techniques using modern tools |
| | Communication Engineering lab-II | CO1 | Students will be able to demonstrate the behavior of passive components at RF frequency |
| | | CO2 | Students will be able to design and develop antenna and analyze the radiation mechanism of antenna |
| | | CO3 | students will be able to demonstrate non-idealities of practical op-amp |
| | | CO4 | Students will be able to demonstrate different linear and Non-linear applications of Op-amp |
| | | CO5 | Students will be able to demonstrate applications of Special Purpose IC's like IC555 and LM317 |
| | Mini project-I | CO1 | Students will be able to apply basic concepts to implement project model |
| | | CO2 | Students will be able to demonstrate various analog and digital IC's for usage in different electronic circuits |
| | | CO3 | Students will be able to demonstrate different simulation tools for testing of Mini project |
| | | CO4 | Students will be able to design PCB |
| | | CO5 | Students will be able to develop skills of team work |
| | VI | Discrete Time Signal Processing DTSP | CO1 |
| CO2 | | | Students will be able to implement efficient algorithm s (Fast Fourier |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | | transform) for faster computation |
| | | CO3 | Student will be to design linear filters using various FIR and IIR techniques |
| | | CO4 | Students will be able to understand the concept of multiple sampling rate conversion and implementation mechanism |
| | | CO5 | Students will be able to implement the algorithm for developing various real life, image processing, antenna scanning mechanism for RADAR, synthesis aperture radar. |
| | | Operating System OS | CO1 |
| | CO2 | | Students will be able to calculate the performance of different scheduling algorithms in operating system. |
| | CO3 | | Students will be able to illustrate memory management in operating system. |
| | CO4 | | Students will be able to compare different types of operating systems. |
| | CO5 | | Students will be able to explain basic structure of operating system. |
| | Computer Communication Networks CCTN | CO1 | Assemble the components of a PC and install one or more network operating systems resulting in a functioning |
| | | CO2 | Design a small or medium sized computer network including media types, end devices, and interconnecting devices that meets a customer's specific needs |
| | | CO3 | Perform basic configurations on routers and Ethernet switches. |
| | | CO4 | Demonstrate knowledge of programming for network communications |
| | | CO5 | Learn to simulate computer networks and analyze the simulation results |
| | | CO6 | Troubleshoot connectivity problems in a host occurring at multiple layers of the OSI model |
| | | CO7 | Develop knowledge and skills necessary to gain employment as computer network engineer and network administrator |
| | Digital Communication DCOM | CO1 | Students will be able to apply the PC concepts of Information Theory in source coding |
| | | CO2 | Students will be able to evaluate different methods to eliminate Inter-symbol interference |
| | | CO3 | Students will be able to compare different band-pass modulation techniques |
| | | CO4 | Students will be able to evaluate performance of different error control codes |
| | | CO5 | Students will be able to compare different spread spectrum spreading techniques |
| | Very Large Scale Integrated Design (VLSID) | CO1 | Students will be able to illustrate CMOS fabrication flow and technology scaling |
| | | CO2 | Students will be able to design MOSFET based logic circuit. |
| CO3 | | Students will be able to draw layout of given logic circuit. | |
| CO4 | | Students will be able to design logic circuits with different design styles using simulation tools | |
| CO5 | | Students will be able to illustrate working principle of operation of different types of memories | |
| Television | CO1 | Students will be able to differentiate different types of television systems | |

| SEM | SUBJECT | CODE | STATEMENTS | |
|---------------------------|---|---------------------------------------|--|--|
| | Engineering TVE | | and will be able to apply concepts of modulation. | |
| | | CO2 | Students will be able to understand color television system and will be able to apply it to image processing. | |
| | | CO3 | Students will be able to evaluate fundamental concepts of digital video. | |
| | | CO4 | Students will be able to understand advanced TV system. | |
| | | CO5 | Students will be able to understand High Definition Television. | |
| | Communication Engineering Lab-III CE-III | CO1 | Students will be able to determine maximum rate at which a reliable communication can take place over the channel using modern tools | |
| | | CO2 | Students will be able to demonstrate the performance of different waveform techniques for the generation of digital representation of signals. | |
| | | CO3 | Students will be able to demonstrate different digital modulation techniques | |
| | | CO4 | Students will be able to demonstrate installation of network OS | |
| | | CO5 | Students will inspect college LAN and Firewall to see configuration of system | |
| | Communication Engineering lab-IV | CO1 | Students will be able to demonstrate the concepts of the television | |
| | | CO2 | Student will be able demonstrate various characteristics of Integrated circuits | |
| | | CO3 | Students will be able to design and demonstrate mask layout diagram various logical circuits on simulation software like Microwind. | |
| | Mini project-II | CO1 | Students Will be able to apply basic concepts of electronics and telecommunication to implement project model | |
| | | CO2 | Students Will be able to demonstrate various usage of analog and digital IC's in different electronic circuits. | |
| | | CO3 | Students Will be able to demonstrate different simulation tools for testing of Mini project. | |
| | | CO4 | Students Will be able to design PCB | |
| | | CO5 | Students Will be able to work in team. | |
| | VII | Image & Video Processing IVP Sem. VII | CO1 | Students will be able to understand theory and models in image and video processing |
| | | | CO2 | Students will be able to interpret and analyze 2D signals in frequency domain through image transforms |
| CO3 | | | Students will be able to apply quantitative models of image and video processing for various fields | |
| CO4 | | | Students will be able to develop innovative design for practical application in various fields. | |
| Mobile Communication (MC) | | CO1 | Student will be able to understand the GSM, CDMA concepts and architecture, frame structure, system capacity, service provided. | |
| | | CO2 | Student will be able to describe the evolution of mobile communication generations like 2G, 2.5G, and 3G with their characteristics and limitations. | |
| | | CO3 | Student will be able to understand the emerging technologies required for fourth generation mobile system such as SDR, MIMO, etc. | |
| | | CO4 | Student will be able to understand different indoor and outdoor propagation models related to losses and different types of fading. | |
| | | CO5 | Student will be able to simulate the various designing parameters for mobile communication systems. | |

| SEM | SUBJECT | CODE | STATEMENTS |
|--|--|---|--|
| | Optical Communication & Networks (OCN) | CO1 | Student will apply fundamental principles of optics and light wave to design reliable optical link |
| | | CO2 | Student will analyze the transmission characteristics of optical fiber to design long distance and high data rate system |
| | | CO3 | Student will understand the structures, functions, material and working principles of optical Components |
| | | CO4 | Student will be able to analyze the performance optical network by using fundamental knowledge of networking |
| | | CO5 | Student will be able to design high capacity modern optical network |
| | Microwave & Radar Engineering MRE | CO1 | Student will be able to determine significance and usage of transmission lines, passive components, matching circuits in microwave communication system. |
| | | CO2 | Student will be able to differentiate between choices of different microwave signal generator circuits and will be able to estimate their performances. |
| | | CO3 | Student will be able to recognize different microwave semiconductor devices and their utilization in real life. |
| | | CO4 | Student will be able to distinguish between different radars as per their usage and analytically estimate their performance |
| | | CO5 | Student will be able to learn different radar based navigation systems and usage of microwaves in domestic as well as commercial applications |
| | Data Compression & Encryption Elective - (DCE) | CO1 | Students will be able to evaluate different compression techniques; their trade offs and applies to optimally compress data. |
| | | CO2 | Students will be able to analyze and upgrade the existing standards. |
| | | CO3 | Students will be able to validate the cryptographic techniques. |
| | | CO4 | Students will be able to develop advanced algorithms for secure data transmission. |
| | | CO5 | Students will be able to design robust and secure systems using industry standard algorithms. |
| | Image & Video Processing lab | CO1 | Students will be able to apply arithmetic , logical and morphological operations on images |
| | | CO2 | Students will be able to apply and analyze various point processing techniques on images |
| | | CO3 | Students will be able to interpret histogram equalization and stretching |
| | | CO4 | Students will be able to apply Low pass and High pass filtering in spatial and frequency domain |
| | | CO5 | Students will be able to analyze Fourier transform on images |
| Advanced Communication Engineering lab- II | CO1 | Students will be able to synthesize and characterize the wireless channel using different software tools. | |
| | CO2 | Students will be able to design cellular system and evaluate the system parameters. | |
| | CO3 | Students will be able to simulate and validate the various propagation models through simulation tools. | |
| | CO4 | Students will be able to design and implement codes for mobile communication. | |
| | CO5 | Student will be able to develop observation manuals for experiments. | |
| Advanced Communication | CO1 | Student will be able to understand the GSM, CDMA concepts and architecture, frame structure, system capacity, service provided. | |

| SEM | SUBJECT | CODE | STATEMENTS |
|---|---------------------------------------|----------------------|--|
| | Engineering lab-I | CO2 | Student will be able to describe the evolution of mobile communication generations like 2G, 2.5G, and 3G with their characteristics and limitations. |
| | | CO3 | Student will be able to understand the emerging technologies required for fourth generation mobile system such as SDR, MIMO, etc. |
| | | CO4 | Student will be able to understand different indoor and outdoor propagation models related to losses and different types of fading. |
| | | CO5 | Student will be able to simulate the various designing parameters for mobile communication systems. |
| | Data Compression & Encryption DCE-Lab | CO1 | Students will be able to evaluate different compression techniques using different software tools |
| | | CO2 | Students will be able to validate the cryptographic techniques |
| | | CO3 | Students will be able to demonstrate advanced algorithms for secure data transmission |
| | | CO4 | Students will be able to design robust and secure systems using industry standard algorithms |
| | Project Stage - I | CO1 | Students will be able to formulate the problems in existing telecommunication process |
| | | CO2 | Students will be able to carry out literature survey for your project idea |
| | | CO3 | Students will be able to design your circuits and/or software. |
| | | CO4 | Students will be able to work as team player and take responsibilities related to your project |
| | | CO5 | Students will be able to write technical paper and/or presentation with respect to your project |
| | | CO6 | Students will be able to simulate your circuit design and/or software for your project |
| | VIII | Wireless Networks WN | CO1 |
| CO2 | | | Student will be able to list and compare personal area network(PAN) technologies such as Zigbee, Bluetooth etc. |
| CO3 | | | Student will be able to understand the details of Sensor network architecture, traffic related protocol, transmission technology etc. |
| CO4 | | | Student will be able to understand the middleware protocol and network management issues of sensor networks. |
| CO5 | | | Students will be able to simulate the various wireless networks parameters. |
| CO6 | | | Student will be able to use wireless technologies in developing automation process prototypes. |
| Satellite communication and Network (SCN) | | CO1 | Student will be able to explain basics of satellite communication |
| | | CO2 | Student will be able to explain and analyze link budget of satellite communication for proper communication |
| | | CO3 | Student will be able to use the system for benefit of society |
| | | CO4 | Student will be able to use different applications of satellite communication |
| | | CO5 | Student will be able to apply knowledge to evaluate geometrical parameters of orbits for satellite installation planning |
| Internet & Voice communication (IVC) | | CO1 | Students will be able to understand the concept of encapsulation and apply its relationship to layering in the network models. |
| | | CO2 | Students will be able to explain the operation of the components of a router |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | | including, DHCP, NAT/PAT, Routing function, Switching function. |
| | | CO3 | Students will be able to describe how DNS works in the global Internet including caching and root servers. |
| | | CO4 | Students will be able to understand how TCP's byte-stream sliding window is related to a traditional packet-based sliding window algorithm. |
| | | CO5 | Students will be able to implement local area networks using both static and dynamic addressing techniques including sub netting. |
| | | CO6 | Students will be able to understand various real-time interactive audio/video compression techniques & protocols associated with it. |
| | Speech Processing (Elective) | CO1 | Students will be able to explain speech production mechanism, phoneme classification, digital models for speech production, Homomorphic speech processing and LPC analysis, and parametric speech coding. |
| | | CO2 | Students will be able to apply signal processing theory for estimation of speech parameters in time and frequency domain including pitch and formants. |
| | | CO3 | Students will be able to analyze application of speech processing in speech compression, speech recognition, and speech synthesis. |
| | | CO4 | Students will be able to enhance their written and oral technical communication skills related to speech processing subject. |
| | Telecom Network Management (TNM) | CO1 | Students will be able to Demonstrate broad knowledge of fundamental principles and network management standards |
| | | CO2 | Students will be Understand basic of telecommunication, networking and information technologies |
| | | CO3 | Students will know the Architect and implement networked informative systems. |
| | | CO4 | Students will Understand The Network Management correlation techniques and Applications. |
| | | CO5 | students will anticipate the way technological change and emerging technologies might alter the assumptions of present architectures and systems |
| | Internet & Voice communication Lab | CO1 | Students will be able to understand the concept of encapsulation and apply its relationship to layering in the network models. |
| | | CO2 | Students will be able to install, configure, and troubleshoot server and client operating systems. |
| | | CO3 | Students will be able to implement local area networks using both static and dynamic addressing techniques including sub netting. |
| | | CO4 | Students will be able to understand how TCP's byte-stream sliding window is related to a traditional packet-based sliding window algorithm. |
| | Speech Processing (Lab) | CO1 | Students will be able to apply standard digital signal processing tools to analyze speech signals. |
| | | CO2 | Students will be able to employ signal processing techniques to analyze speech in time and frequency domains. |
| | | CO3 | Students will be able to experiment on different type of speech samples to extract some features and illustrate the results in MATLAB. |
| | Telecom Network Management | CO1 | Students will be able to simulate various telecommunication network management parameters. |
| | | CO2 | Students will be able to design and validate various standards using |

| SEM | SUBJECT | CODE | STATEMENTS |
|-----|--------------------|------------|--|
| | (TNM) Lab | | software tool. |
| | | CO3 | Students will be able to design and monitor telecommunication network management link and observe the various parameters using simulation tools. |
| | Project Stage - II | CO1 | Students will be able to implement their project idea in hardware and/or software using modern tools |
| | | CO2 | Students will be able to do debugging and/or troubleshooting for their project using modern tools. |
| | | CO3 | Students will be able to propose cost effective and/or eco-friendly solutions to existing telecommunication problems. |
| | | CO4 | Students will be able to work as team player in a group. |
| | | CO5 | Students will be able to write technical paper and/or presentation with respect to your project. |
| | | CO6 | Students will be able to implement their project idea in hardware and/or software using modern tools. |

Department of Biomedical Engineering (UG)

| SEM | SUBJECT | CODE | STATEMENTS |
|-----|--|-----------------|---|
| III | Applies Mathematics-III | BMC301.1 | Student will able to learn the basic Knowledge of Laplace Transformation and its applications (Learn) |
| | | BMC301.2 | Student will able to understand the basics of Fourier series, Fourier Integral & Fourier transform (Understand) |
| | | BMC301.3 | Student will able to evaluate their mathematical ideas for solving various properties of Vector Differentiation (Evaluate) |
| | | BMC301.4 | Student will develop ability for understanding the basics of complex Variable (Develop) |
| | | BMC301.5 | To build ability to solve problems of various type of Properties of Bessel function (Ability) |
| | Basics of Human Physiology (BHP) | BMC302.1 | Student will be able to Understand the structure and function of cell, the action potential and muscle physiology (Understand). |
| | | BMC302.2 | Student will be able to distinguish the different anatomical parts of cardiovascular and respiratory system. Understand the physiology of heart, and other organs of cardiovascular system, concept of Blood pressure and use of ECG. Understand the exchange in gases taking place in body and use of spirometer (Distinguish) |
| | | BMC302.3 | Student will be able to know the composition of blood, blood cells with their functions, basics of cell counting, blood grouping and coagulation of blood (Know) |
| | | BMC302.4 | Student will be able to distinguish different organs of digestive and urinary system. Understand the process of digestion, secretions and their functions. Understand the process of urine formation and micturition (Distinguish) |
| | | BMC302.5 | Student will be able to Understand the anatomy of nervous system, working of different parts of brain, parasympathetic and sympathetic nervous system, reflex arc and reflex action. Distinguish different parts of eyes and ear, their structure and function. Understand the hearing mechanism and image formation on the retina, understand the use of ophthalmoscope and design of hearing aid (Understand) |
| | | BMC302.6 | Student will be able to Understand the different parts of male and female reproductive system with their working, action of sex hormones. To know all the endocrine glands with their secretion and function, and control action (Understand) |
| | Electrical Network Analysis & Synthesis (ENAS) | BMC303.1 | Student will be able to learn a number of powerful engineering circuit analysis techniques such as nodal analysis, mesh analysis, source transformation and several methods of simplifying networks (Learn) |
| | | BMC303.2 | Student will be able to apply concept of network theorems to the electrical circuits (Apply) |
| | | BMC303.3 | Student will be able to use concept of graphical solution to electrical network (Use) |
| | | BMC303.4 | Student will be able to understand frequency response in electrical circuits |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | | (Understand) |
| | | BMC303.5 | Student will be able to make the learner learn how to synthesize an electrical network from a given impedance/admittance function (Synthesize) |
| | Electronic Circuit Analysis and Devices-I (ECAD-I) | BMC304.1 | Student will be able to understand the basic semiconductor components like P-N junction diodes ,Zener diodes and their various applications (Understand) |
| | | BMC304.2 | Student will be able to understand BJT working and its various configurations and DC operating conditions (Understand) |
| | | BMC304.3 | Student will be able to understand AC operating conditions and Design of single stage small signal CE amplifiers |
| | | BMC304.4 | Student will be able to Design single stage small signal CS amplifiers (Design) |
| | | BMC304.5 | Student will be able to understand the working of MOSFETs its characteristics and its various applications (Understand) |
| | | BMC304.6 | Student will be able to understand the concept of multistage amplifiers (Understand) |
| | Biomaterials, Prosthetics and Orthotics (BPO) | BMC305.1 | Student will be able to understand the definition, classification and general applications of biomaterials. Study the surface characterization techniques (Understand) |
| | | BMC305.2 | Student will be able to understand properties and applications of polymeric, degradable and composite biomaterials (Understand) |
| | | BMC305.3 | Student will be able to understand properties and applications of metals and ceramic biomaterial (Understand) |
| | | BMC305.4 | Student will be able to do selection of materials based on testing of the biomaterials done biologically, mechanically, physio-chemically and thermally before implantation in the human body (Selection) |
| | | BMC305.5 | Student will be able to do study anatomical levers, gait cycle and gait parameters (Study) |
| | | BMC305.6 | Student will be able to understand the definition of prostheses and orthoses and its design principles (Understand) |
| | Object Oriented Programming (OOPM) | BML301.1 | Student will be able to apply fundamental programming constructs (Apply) |
| | | BML301.2 | Student will be able to illustrate the concept of packages, classes and objects (Illustrate) |
| | | BML301.3 | Student will be able to elaborate the concept of strings arrays and vectors (Elaborate) |
| | | BML301.4 | Student will be able to implement the concept of inheritance and interfaces (Implement) |
| | | BML301.5 | Student will be able to implement the notion of exception handling and multithreading (Implement) |
| | | BML301.6 | Student will be able to develop GUI based application (Develop) |
| | | | |
| IV | Applied Mathematics-IV | BMC401.1 | Student will able to Learn the basics of calculus of variation and its applications |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | BMC401.2 | Student will able to understand the basics of vector spaces. |
| | | BMC401.3 | Student will able to evaluate their mathematical ideas for solving various properties of matrices and eigenvectors. |
| | | BMC401.4 | Student will develop ability for understanding the basics of complex integration |
| | | BMC401.5 | Student will able to understand the basics of Normal Poisson, Binomial distribution, and Correlation. |
| | Biomedical Transducers and Measuring Instruments (BTMI) | BMC402.1 | The students will be able to clearly understand generalized medical instrumentation system, general properties of transducers, static and dynamic characteristics of transducers and sensors (Understand) |
| | | BMC402.2 | The students will be able to Understand the principle of working of electrical signal measuring instruments & applications (Understand) |
| | | BMC402.3 | The students will be able to Understand the fundamental principles and applications of various types of sensors including motion, displacement and pressure sensors (Understand) |
| | | BMC402.4 | The students will be able to Present different transduction methods for measuring temperature (Present) |
| | | BMC402.5 | The students will be able to understand principle of various bio potential electrodes (Understand) |
| | | BMC402.6 | Student will be able to understand principle of various chemical, biosensors, and differentiate various amperometry and potentiometric sensors |
| | Linear Integrated Circuits (LIC) | BMC403.1 | Students will be able to analyse different types of differential amplifiers (Analyse) |
| | | BMC403.2 | Students will be able to demonstrate basics of operational amplifiers (Demonstrate) |
| | | BMC403.3 | Students will be able to analyse and design operational amplifier to perform mathematical operations (Analyse and Design) |
| | | BMC403.4 | Students will be able to analyse and design operational amplifiers as oscillators (Analyse and Design) |
| | | BMC403.5 | Students will be able to illustrate basics of negative feedback and perform analysis on different types of circuits with negative feedback (Illustrate) |
| | | BMC403.6 | Students will be able to exhibit working of power amplifiers, its types and DC and AC analysis and designing (Exhibit) |
| | Logic Circuits (DE) | BMC404.1 | Student will be able to understand various number systems and its arithmetic (BCD, Binary, Octal, Hexadecimal etc. |
| | | BMC404.2 | Student will be able to solve sums on K-maps, Boolean algebra and SOP-POS implementations (Solve) |
| BMC404.3 | | Student will be able to design code converter circuits, parity generator-checker circuits and magnitude comparator circuits (Design) | |

| SEM | SUBJECT | CODE | STATEMENTS | |
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| | | BMC404.4 | Student will be able to design circuits using multiplexers, demultiplexer, and decoders (Design) | |
| | | BMC404.5 | Student will be able to design synchronous and asynchronous counters and registers using flip flops (Design) | |
| | | BMC404.6 | Student will be able to design various gates using various logic families (Design) | |
| | Signals & Control Systems (SCS) | BMC405.1 | Students will be able to differentiate between Continuous and Discrete Time signals and system (Differentiate) | |
| | | BMC405.2 | Students will be able to analyse magnitude and phase responses of various periodic and aperiodic signals (Analyse) | |
| | | BMC405.3 | Students will be able to evaluate time domain and frequency domain analysis of the system (Evaluate) | |
| | | BMC405.4 | Students will be able to correlate signals with itself and with other signals (Correlate) | |
| | Introduction to Simulation Tools (IST) | BML401.1 | Students will be able to understand various tools of simulation software (Understand) | |
| | | BML401.2 | Students will be able to write Programme in Programming Software (Write) | |
| | | BML401.3 | Student will be able to simulate Digital and analog circuits (Simulate) | |
| | | BML401.4 | Student will be able to understand use of Proteus software (Understand) | |
| | | BML401.5 | Student will be able to simulate differential equations (Simulate) | |
| | V | Biomedical Instrumentation - I (BMI-I) | BMC501.1 | Student will be able to analyse working and principle of analytical and biomedical. (Analyse) |
| | | | BMC501.2 | Student will be able to choose particular equipment for the given biomedical application (Evaluate) |
| | | | BMC501.3 | Student will be able to compare the invasive and noninvasive methods used in analytical and biomedical instruments. (Create) |
| BMC501.4 | | | Student will be able to identify the principle of electronics used in analytical and biomedical equipment. (Analyse) | |
| BMC501.5 | | | Student will be able to design basic circuits used in analytical and biomedical equipment (Create) | |
| Microprocessors | | BMC502.1 | Compare the RISC & CISC processors and Intel family of microprocessors considering the biomedical requirements (Analyse) | |
| | | BMC502.2 | Select the appropriate I/O chip in microprocessor based system design (Evaluate) | |
| | | BMC502.3 | Design microprocessor based systems for real life applications (Create) | |
| | | BMC502.4 | Develop assembly language programs for real-time applications (Create) | |
| | | BMC502.5 | Students will be able to develop 8086 based process control system (Develop) | |
| Analog and Digital Circuit Design (ADCD) | | BMC503.1 | Students will be able to analyze and relate the application of specialized ICs (IC 555, IC 566, IC 565, IC 8038) in the field of Biomedical (Analyse) | |
| | | BMC503.2 | Students will be able to design the filters to remove noise as per the given specification (Create) | |
| | | BMC503.3 | Students will be able to develop basic circuits for Biomedical applications using Timers, filters, function generators, voltage regulators, motors, power devices (Create) | |
| | | BMC503.4 | Students will be able to compare the characteristics of various power | |

| SEM | SUBJECT | CODE | STATEMENTS | |
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| | | | devices (Evaluate) | |
| | | BMC503.5 | Students will be able to predict and determine the sources of noise in an electronic circuitry (Create) | |
| | Biomedical Digital Signal Processing (BDSP) | BMC504.1 | Students will be able to identify properties of different systems for processing Biomedical Systems (Analyze) | |
| | | BMC504.2 | Students will be able to evaluate convolution on Biomedical systems using efficient computation techniques (Analyze) | |
| | | BMC504.3 | Students will be able to select the transform of depending upon the application on biomedical signals. (Evaluate) | |
| | | BMC504.4 | Students will be able to design and test DSP algorithms (Create) | |
| | | BMC504.5 | Students will be able to design and simulate various digital filters for medical application (Create) | |
| | Principles of Communication Engineering | BMC505.1 | Students will be able to choose appropriate modulation technique for biomedical application (Evaluate) | |
| | | BMC505.2 | Students will be able to design the circuits for AM & FM techniques (Create) | |
| | | BMC505.3 | Students will be able to develop the programming skills by simulations. (Create) | |
| | | BMC505.4 | Students will be able to analyze the characteristics of the receivers required in demodulation. (Analyze) | |
| | | BMC505.5 | Students will be able to design the circuit for generation and detection of analog pulse modulated signals (Create) | |
| | Business Communications and Ethics (BCE) | BML506.1 | Student will be able to prepare the elements of technical writing such as proposals, reports and meeting documentation. (Create) | |
| | | BML506.2 | Student will be able to develop and demonstrate analytical and interpersonal skills, confidence and the ability to appreciate diverse perspectives in social and professional settings. (Apply, Analyze) | |
| | | BML506.3 | Student will be able to demonstrate awareness of professional and social ethics and etiquettes, values and responsibilities and contemporary issues (Understand, Evaluate). | |
| | | BML506.4 | Student will be able to utilize the communication and employment skills acquired for developing engineering solutions, for success in placements and career and for life-long learning. (Remember and Apply) | |
| | VI | Biomedical Instrumentation – II | BMC601.1 | Student will be able to analyse working and principle of diagnostic equipment. (Analyze) |
| | | | BMC601.2 | Student will be able to choose particular equipment for the given biomedical application (Evaluate) |
| | | | BMC601.3 | Student will be able to compare the invasive and non-invasive methods used in biomedical instruments. (Create) |
| BMC601.4 | | | Student will be able to test and troubleshoot various diagnostic equipment's. (Analyze) | |
| BMC601.5 | | | Student will be able to design basic circuits used in diagnostic equipment (Create) | |
| Biostatistics | | BMC602.1 | Student will able to analyze clinical data using descriptive statistic and probability (Analyze). | |
| | | BMC602.2 | Student will able to prepare logic using estimation theory for identifying | |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | | disease (Create). |
| | | BMC602.3 | Student will able to evaluate effect of different medicine available for same disease (Analyze). |
| | | BMC602.4 | Student will able to solve problems on sample testing (Analyze). |
| | | BMC602.5 | Student will be able to predict association between two attributes from the same domain (Create) |
| | | Biological Modeling And Simulations (BMS) | BMC603.1 |
| | BMC603.2 | | Students will be able to develop the model for neuron using HHSIM software (Create) |
| | BMC603.3 | | Students will be able to differentiate various eye movements. (Analyze) |
| | BMC603.4 | | Students will be able to measure the membrane potential of a cell using the simulated software tools such as Ngswin, HHSIM etc. (Evaluate) |
| | BMC603.5 | | Students will be able to create a model for active transport mechanism using Matlab software. (Create) |
| | Microcontroller s And Embedded Systems (MCES) | BMC604.1 | Analyze the design challenges in developing Embedded Systems (Analyze) |
| | | BMC604.2 | Select appropriate microcontroller for Embedded system design (Evaluate) |
| | | BMC604.3 | Design microcontroller based Embedded Systems for real life applications (Create) |
| | | BMC604.4 | Develop assembly language programs for real-time applications (Create) |
| | Medical Imaging – I | BMC605.1 | Students will be able to identify appropriate imaging modalities for imaging different areas of a human body (analyze) |
| | | BMC605.2 | Students will be able to compare between recent imaging equipments. (Analyze) |
| | | BMC605.3 | Students will be able to determine the safety aspects of radiation on human body. (Analyze) |
| | | BMC605.4 | Student will be able to interpret and analyze the images of XRAY, Fluoroscopy, and ultrasound. (Analyze) |
| | | BMC605.5 | Student will be able to test different modules of the imaging equipment's. (Evaluate) |
| | Digital Image Processing (DIP) | BMC606.1 | Students will be able to determine the performance of various filters for medical images. (Analyze) |
| | | BMC606.2 | Students will be able to estimate image sampling and quantization requirements for MRI and CT images. (Analyze) |
| BMC606.3 | | Students will be able to design and implement 2-D spatial filters for image enhancement for tomographic images (Create) | |
| BMC606.4 | | Students will be able to construct algorithms for image processing problems (Create) | |
| BMC606.5 | | Students will be able to test and validate image processing techniques for medical images (Evaluate) | |
| VII | Biomedical Instrumentation - III (BMI-III) | BMC701.1 | Students will be able to choose appropriate electromagnetic radiation for the given biological effect. (Evaluate) |
| | | BMC701.2 | Students will be able to categorize different circuits in the life saving equipment's. (Analyze) |
| | | BMC701.3 | Students will be able to develop sophisticated therapeutic instruments. |

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| | | | (Create) |
| | | BMC701.4 | Students will be able to detect heart rate variability pattern of the patients (Analyze) |
| | | BMC701.5 | Students will be able to relate patient safety aspects in hospital environment (Create) |
| | Medical Imaging – II (MI-II) | BMC702.1 | Students will be able to compare different Imaging Modalities based on its usefulness and applications (Evaluate) |
| | | BMC702.2 | Students will be able to determine the properties of the CT and MRI on human body. (Analyze) |
| | | BMC702.3 | Students will be able to prepare a workflow for CT and MRI Machine. (Create) |
| | | BMC702.4 | Students will be able to detect structural, functional disorders in human body based on analyzing CT and MR Images. (Analyze) |
| | | BMC702.5 | Students will be able to set-up the CT and MR Instrument in hospitals (Create) |
| | Biomechanics Prosthesis and Orthosis | BMC703.1 | Understand the definition of biomechanics, prostheses orthosis and its classification and design principles (Understand) |
| | | BMC703.2 | Develop a better understanding of how mechanical principles influence human motion during everyday life (Develop) |
| | | BMC703.3 | Student will understand basics of gait cycle and gait analysis (Understand) |
| | | BMC703.4 | Student will be able to differentiate different types of artificial limbs (Differentiate) |
| | | BMC703.5 | Students will be able to fabricate different prosthetic and orthotic devices (Fabricate) |
| | Very Large Scale Integrated Circuits | BMC704.1 | Students will be able to compare different VLSI technologies (Evaluate) |
| | | BMC704.2 | Students will be able to design CMOS based circuits (create) |
| | | BMC704.3 | Students will be able to estimate impact on parameters such as threshold voltage, ID ,Kn etc. due to scaling (Evaluate) |
| | | BMC704.4 | Students will be able to synthesize logical circuits using VHDL (understand) |
| | | BMC704.5 | students will be able draw stick diagram and layouts (Analyze) |
| | Networking And Information System In Medicine (NISM) | BMC705.1 | Students will be able to identify a type of computer topology used in network (Analyse) |
| | | BMC705.2 | Students will be able to compare the benefits of the filmless hospitals over the film based hospitals (Analyse) |
| | | BMC705.3 | Students will be able to differentiate between the various PACS architectures (Analyse) |
| | | BMC705.4 | Students will be able to evaluate the various factors to be essential for a good network. (Evaluate) |
| | | BMC705.5 | Students will be able to design a network configuration for a particular application. (Create) |
| VIII | Nuclear Medicine (NM) | BMC801.1 | Students will be able to compare different types of detectors used in nuclear imaging (Analyze) |
| | | BMC801.2 | Students will be able to diagnose biological effects of radiation on human body.(Analyze) |

| SEM | SUBJECT | CODE | STATEMENTS |
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| | | BMC801.3 | Students will be able to prepare a workflow for working of Gamma Camera, PET and SPECT. (Create) |
| | | BMC801.4 | Students will be able to assess structural, functional disorders in human body based on analyzing Gamma Camera, PET, SPECT and RIA Images. (Evaluate) |
| | | BMC801.5 | Students will be able to reconstruct the Gamma, PET, SPECT Images using suitable reconstruction techniques. (Create) |
| | Biomedical Microsystems (BMM) | BMC802.1 | Student will be able to choose appropriate MEMS material for the BioMEMS application. (Create) |
| | | BMC802.2 | Student will be able to develop the MEMS processes for the BioMEMS application. (Create) |
| | | BMC802.3 | Student will be able to modify the MEMS processes of a simple MEMS device in order to reduce the fabrication time. (Create) |
| | | BMC802.4 | Students will be able to relate on the significance of miniaturization of Medical Instruments. (Analyze) |
| | | BMC802.5 | Student will be able to compare the CMOS and MEMS fabrication processes in order to avoid contaminations inside the fabrication instruments. (Evaluate) |
| | Hospital Management (HM) | BMC803.1 | Student will be able to prepare the list of equipment's required in various department of the hospital (Create) |
| | | BMC803.2 | Student will be able to draw a schematic for the flow of the patients in the hospital. (Analyze) |
| | | BMC803.3 | Student will be able to modify the layout of the department in order to reduce the human traffic in the hospital. (Create) |
| | | BMC803.4 | Students will be able to relate the importance and application of various Medical Instruments in different departments of hospital. (Analyze) |
| | | BMC803.5 | Student will be able to compare the working of various departments in the hospital. (Evaluate) |
| | Lasers and Fiber Optics (Elective) | BME8011. 1 | Students will be able to categorize the different lasers and fiber optics principles and their application. (Analyze) |
| | | BME8011. 2 | Students will be able to compare the construction of different types of lasers and their working. (Evaluate) |
| | | BME8011. 3 | Students will be able to analyze the use of fiber optic laser system in various fields of medicine. (Analyze) |
| | | BME8011. 4 | Students will be able to create appropriate hospital design considering laser safety requirements. (Create) |
| | | BME8011. 5 | Students will be able to correlate the knowledge of medicine and engineering for the wellness of human being. (Analyze) |
| | Health care Informatics (Elective) | BME8013. 1 | Students will be able to understand the healthcare interoperability semantic and syntactic. (Understand) |
| | | BME8013. 2 | Students will be able to understand the standards of healthcare interoperability for Medical Images and Medical Messages. (Understand) |
| BME8013. 3 | | Students will be able to fabricate information messages associated with healthcare event. (Fabricate) | |
| BME8013. 4 | | Students will be able to fabricate and understand the information exchange messages for transfer of medical Image Data. (Fabricate) | |

Department of Information Technology (PG)

| SEM | SUBJECT | CODE | STATEMENTS |
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| I | Data Science | MEITC101.1 | Demonstrate knowledge of statistical and exploratory data analysis data analysis techniques utilized in decision making. |
| | | MEITC101.2 | Apply principles of Data Science to the analysis of business problems. |
| | | MEITC101.3 | To use Machine Learning Algorithms to solve real-world problems. |
| | | MEITC101.4 | To provide data science solution to business problems and visualization |
| | IT Infrastructure Design | MEITC102.1 | Design Enterprise wide network design considering various QoS Parameter |
| | | MEITC102.2 | Explain the design challenge of large scale data centre |
| | | MEITC102.3 | Implementation of SDN and how it will impact current Design practice |
| | | MEITC102.4 | Explain latest trend in SDN |
| | Advances in Software Engineering | MEITC103.1 | Students will be able to Compare and chose a process model for a software project development. |
| | | MEITC103.2 | Students will be able to Analyze and model software requirements of a software system |
| | | MEITC103.3 | Students will be able to Design and Modeling of a software system with tools |
| | | MEITC103.4 | Prepare the SRS, Design document, Project plan of a given software system |
| | Cloud Computing | MEITDLO1 013.1 | Students will be able to apply suitable virtualization concept |
| | | MEITDLO1 013.2 | Students will be able to design cloud services |
| | | MEITDLO1 013.3 | Students will be able to design various applications by integrating cloud services using mobile cloud |
| | | MEITDLO1 013.4 | Students will be able to apply the concepts of mobile cloud computing for implementing mobile cloud applications |
| | Disaster Management and Mitigation Measures | ILO1017.1 | CO1 Students will be able understand natural as well as manmade disaster and their extent and possible effects on the economy. |
| | | ILO1017.2 | CO2 Students will be able to create Plan of national importance structures based upon the previous history. |
| | | ILO1017.3 | CO3 Student will be able to analyse government policies, acts and various organizational structure associated with an emergency. |
| | | ILO1017.4 | CO4 Students will be able to know the simple do's and don'ts in such extreme events and act accordingly. |
| II | Security & Risk Management | MEITC201.1 | Able to explain the knowledge about information security and Risk Management |
| | | MEITC201.2 | Able to analysis Risk assessment methodology and risk mitigation approaches |
| | | MEITC201.3 | Able to explain security management concepts and configuration management |
| | | MEITC201.4 | Able to explain IT audit and its activities |
| | High Performance Computing | MEITC202.1 | Determine the complexity of a given parallel algorithm |
| | | MEITC202.2 | Identify design Issues and limitations in Parallel Computing |
| | | MEITC202.3 | Design algorithms suited for Multicore processor and GPU systems |

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| | | | using CUDA, MPI, OpenMP |
| | | MEITC202.4 | Analyze and optimize performance parameters. |
| Advance web technology | | MEITC203.1 | To design a responsive web site using HTML5 and CSS |
| | | MEITC203.2 | To design RIA using proper choice of Framework |
| | | MEITC203.3 | To recognize and evaluate website organizational structure and design elements |
| | | MEITC203.4 | Explain emerging web 3.0 standards |
| E-Business & Social Network Analysis | | MEITDLO2021.1 | Develop a complete e-business strategy. |
| | | MEITDLO2021.2 | Develop and implement complete e-commerce site. |
| | | MEITDLO2021.3 | Visualize/Analyze real world Social Networks. |
| | | MEITDLO2021.4 | Analyze the impact of Social Networks on e-Business. |
| Environmental Management | | ME IT ILO2029.1 | Understand the concept of environmental management. |
| | | ME IT ILO2029.2 | Understand ecosystem and interdependence, food chain etc. |
| | | ME IT ILO2029.3 | Understand and interpret environment related legislations |

Department of Computer Engineering (PG)

| SEM | SUBJECT | CODE | STATEMENTS |
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| I | Algorithm & Complexity | CSC101.1 | Able to prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains. |
| | | CSC101.2 | Able to apply the algorithms and design techniques to solve problems |
| | Advance Computer Network and Design | CSC102.1 | Understand the theoretical issues in protocol design and apply it to Quality of service in networks |
| | | CSC102.2 | Understand issues in the design of network processors and apply them to design network systems |
| | | CSC102.3 | Simulate working of wired and wireless networks to understand networking concepts |
| | | CSC102.4 | Develop solutions by applying knowledge of mathematics, probability, and statistics to network design problems. |
| | | CSC102.5 | Understand the basics of software defined networking and explore research problems in that area. |
| | Advanced Operating Systems | CSC103.1 | Apply the principles and concepts in analyzing and designing Advance Operating. |
| | | CSC103.2 | Demonstrate the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system |
| | | CSC103.3 | Analyze the performance and reliability of different Advanced Operating Systems |
| | Department Level Computational Intelligence | CSDLO1014.1 | Understand the importance of computational Intelligence. |
| | | CSDLO1014.2 | Analyze various computational Intelligence technology |
| | | CSDLO1014.3 | Design and implement various intelligent system. |
| | Institute Level Disaster Management & Mitigation Measures | ILO1017.1 | Get to know natural as well as manmade disaster and their extent and possible effects on the economy |
| | | ILO1017.2 | Plan of national importance structures based upon the previous history |
| | | ILO1017.3 | Get acquainted with government policies, acts and various organizational structure associated with an emergency |
| | | ILO1017.4 | Get to know the simple do's and don'ts in such extreme events and act accordingly |
| II | High performance Computing | CS201.1 | Understand different parallel processing approaches and platforms involved in achieving High Performance Computing. |
| | | CS201.2 | Understand design Issues and limitations in Parallel Computing. |
| | | CS201.3 | Learn to programming using message passing paradigm using open source APIs, design algorithms suited for Multicore processor and GPU systems using OpenCL, OpenMP. |
| | | CS201.4 | Analyze and optimize performance parameters |
| | | CS201.5 | Understand HPC enabled Advanced Technologies |
| | Data Science | CS202.1 | Learn the fundamentals of data science to enable, reproduce and scalable |

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| | | | data from a variety of sources. |
| | | CS202.2 | Apply statistical methods, regression techniques, and machine learning algorithms to make sense out of data sets both large and small |
| | | CS202.3 | Design, implement, and evaluate the core algorithms underlying an end-to-end data science workflow, analysis, and visualization of information derived from large datasets. |
| | | CS202.4 | Apply "best practices" in data science with modern tools |
| | Ethical Hacking and Digital Forensics | CS203.1 | Understand the concept of ethical hacking and its associated applications in Information Communication Technology (ICT) world. |
| | | CS203.2 | Acquire knowledge of various digital forensic tools and ethical hacking. |
| | | CS203.3 | Interpret security issues in ICT world, and apply digital forensic tools for security and Investigations |
| | | CS203.4 | Achieve adequate perspectives of digital forensic investigation in various applications/devices like Windows/Unix system, mobile, email etc. |
| | | CS203.5 | Generate legal evidences and supporting investigation reports |
| | Department Level Advance Soft Computing | CSDLO2023.1 | To demonstrate various soft computing techniques |
| | | CSDLO2023.2 | To apply and analyze different soft computing techniques for solving practical applications |
| | | CSDLO2023.3 | To design an intelligent system for social and technical problems |
| | Institute Level Environmental Management | ILO2029.1 | Understand the concept of environmental management |
| | | ILO2029.2 | Understand ecosystem and interdependence, food chain etc. |
| | | ILO2029.3 | Understand and interpret environment related legislations |

Department of Electronics & Telecommunication (PG)

| SEM | SUBJECT | CODE | STATEMENTS |
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| I | Statistical Signal Processing | ETC101.1 | Students will be able to understand basics of linear algebra in communication engineering. |
| | | ETC101.2 | Students will be able to apply appropriate statistical tools for design and analysis of electronics and telecommunication systems that involve randomness. |
| | | ETC101.3 | Students will be able to analyse random processes for LTI systems and estimation theory. |
| | | ETC101.4 | Students will be able to evaluate role of probability models in engineering design. |
| | Optical Communication Networks | ETC102.1 | student will be able to apply fundamental principles of optics and light wave to design optical fibre communication systems |
| | | ETC102.2 | Students will identify the issues related to signal degradation due to multiplexing |
| | | ETC102.3 | Student will be able to identify working principle of various components of all optical network |
| | | ETC102.4 | Student will explore concepts of designing and operating principles of modern optical communication systems and networks |
| | Modern Digital Signal Processing and Applications | ETC103.1 | Implement adaptive filters for a given application; study and apply the techniques of power spectrum estimation and wavelet theory for various applications |
| | | ETC103.2 | Apply signal processing tools to biomedical signal processing and musical sound processing |
| | Next Generation Networks | ETDLO1011.1 | Relate and compare the core differences between traditional and new telecommunication technologies. |
| | | ETDLO1011.2 | Analyse, implement and apply the components of NGN architecture with NGN standards. |
| Disaster Management | ILO1017.1 | Students will be able understand natural as well as manmade disaster and their extent and possible effects on the economy. | |

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| | and Mitigation Measures | | |
| I | | ILO1017.2 | Students will be able to create Plan of national importance structures based upon the previous history. |
| | | ILO1017.3 | Student will be able to analyse government policies, acts and various organizational structure associated with an emergency. |
| | | ILO1017.4 | Students will be able to know the simple do's and don'ts in such extreme events and act accordingly. |
| II | Modern Digital Communications | ETC201.1 | Student will be able to explain and implement different source coding techniques |
| | | ETC201.2 | Student will be able to analyse waveform receivers for coherent and non-coherent communications |
| | | ETC201.3 | Student will be able to describe and design band limited channels |
| | | ETC201.4 | Student will evaluate detection and estimation of signals in the presence of noise |
| | | ETC201.5 | Student will be able to explain characteristics of fading channels |
| Wireless Adhoc and Sensor Networks | | ETC202.1 | Students will be able to understand and explain the concept of Ad-hoc and sensor networks and their applications |
| | | ETC202.2 | Students will be able to setup and evaluate performance of various protocols in wireless sensor and adhoc networks |
| | | ETC202.3 | Students will be able to understand the TCP performance over ad-hoc networks. |
| | | ETC202.4 | Students will be able to understand integration of MANET, Cellular Networks and WLAN |
| RF and Microwave Engineering | | ETC203.1 | Student will be able to characterize devices at higher frequencies |
| | | ETC203.2 | Student will be able to design and analyse RF circuits and components |
| | | ETC203.3 | Student will be able to design and analyse amplifiers, oscillators and mixers at microwave frequencies. |
| | | ETC203.4 | Student will be able to demonstrate skills of planning, design and |

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| | | | deployment of microwave networks |
| Satellite Networking | ETDLO2021.1 | Student will be able to Perform Link Budget for specific satellite network | |
| | ETDLO2021.2 | Student will be able to Learn Different satellite networking concepts | |
| | ETDLO2021.3 | Student will be able to Understand usage of LASERS in satellites and satellite service applications | |
| Environmental Management | ILO2029.1 | Student will be able to understand concept of environmental management | |
| | ILO2029.2 | Student will be able to understand ecosystem and interdependence, food chain etc. | |
| | ILO2029.3 | Student will be able to understand and interpret environment related legislations | |

Department of Master of Management Studies (PG)

| SEM | SUBJECT | CODE | STATEMENTS |
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| I | Perspective Management | MMS CO1.1.1 | To explain the relationships between organizational mission, goals, and objective |
| | | MMS CO1.1.2 | To comprehend the significance and necessity of managing stakeholders |
| | | MMS CO1.1.3 | To conceptualize how internal and external environment shape organizations and their responses |
| | | MMS CO1.1.4 | To develop critical thinking skills in identifying ethical, global, and diversity issues in planning, organizing, controlling and leading functions of management |
| | | MMS CO1.1.5 | To Understand organizational design and structural issues |
| | | MMS CO1.1.6 | To understand that citizenship involves taking conscious steps for societal advancement at individual level and organizational level |
| | Financial Accounting | MMS CO1.2.1 | Clarity and understanding of the basic concepts of accounting and financial statements |
| | | MMS CO1.2.2 | Ability to apply the principles and concepts of accounting in preparing the financial statements |
| | | MMS CO1.2.3 | Ability to execute the accounting process, Recording- Classifying and Summarizing. Understanding the use of accounting software |
| | | MMS CO1.2.4 | Detailed and in depth understanding of all the items in the corporate financial statements |
| | Business Statistics | MMS CO1.3.1 | To know statistical technique |
| | | MMS CO1.3.2 | To understand different statistical tools |
| | | MMS CO1.3.3 | To understand importance of decision support provided by analysis techniques |
| | | MMS CO1.3.4 | To appreciate and apply it in business situations using caselets, modeling, cases and projects |
| | | MMS CO1.3.5 | To understand Managerial applications of Statistics |
| | Operations Management | MMS CO1.4.1 | To expose a student of Management to operations principles. |
| | | MMS CO1.4.2 | To understand basic operating principles in product and service industry |
| | | MMS CO1.4.3 | To be able to apply different analytical techniques of operations Management in different industry sectors like hotel, hospital, mall, BPO, Airlines, manufacturing, consulting etc. |
| | Managerial Economics | MMS CO1.5.1 | To enable the students to understand both the theory and practice of Managerial Economics |

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| | | MMS CO1.5.2 | To ensure that the students are in a position to appreciate the finer nuances of the subject |
| | | MMS CO1.5.3 | To help the students in applying the knowledge so acquired in policy planning and managerial decision making. |
| | Effective and Management Communications | MMS CO1.6.1 | In all social behavior, communication is essential in building and maintaining human relationships |
| | | MMS CO1.6.2 | In business, communication is essential for the smooth and efficient conduct of day-to-day transactions/activities |
| | | MMS CO1.6.3 | In recent years the importance of communication has greatly increased as a result of the growing complexity of businesses, as also the impact of rapid industrialization, globalization and the advent of modern technologies |
| | | MMS CO1.6.4 | English being globally the language of Management, those with good communication skills in English enjoy a distinct advantage in their work and careers. |
| | Business Ethics | MMS CO1.7.1 | To have an in-depth knowledge of the issues concerning Morals, Values, Ideologies and Ethics in personal, professional and business |
| | | MMS CO1.7.2 | To prepare the budding managers and entrepreneurs to develop themselves into better corporate citizens |
| | | MMS CO1.7.3 | To imbibe into students the importance of fair transactions, ethical conduct and conscientious decision making |
| | | MMS CO1.7.4 | To expect an Integrity-driven work place scenario from students |
| | | MMS CO1.7.5 | To ensure sustainability as a compulsive tool of driving Organisational Vision and Mission |
| | | MMS CO1.7.6 | To have a balance between the Theoretical and practical aspects of Ethics in general and Ethics in business in particular |
| | Organisational Behaviour | MMS CO1.8.1 | To provide students understanding how and why people behave in organizations as they do, either as individuals or in groups and how their behaviors affect their performance and performance of the organization as a whole. |
| | | MMS CO1.8.2 | To provide understanding how to effectively modify their behaviour through motivation and leadership for enhanced performance. And also to provide understanding about related concepts such as Org. Structure, Design and Culture. |
| | | MMS CO1.8.3 | To help students to understand human behaviour in organizations and equip them to enhance their performance as well as performance of the people reporting to them. |
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| II | Marketing Management | MMS CO2.1.1 | This coursework is designed to introduce the student to the basic elements of the marketing management terms, implementation of studied term in the industry and related process. |

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| II | | MMS CO2.1.2 | The scope of marketing management is quite broad and the students will be exposed to the marketing concepts that will enable them to acquaint with contemporary marketing practices. |
| | | MMS CO2.1.3 | This module is to learn the art and science of choosing target markets and getting, keeping and growing customers through creating, delivering, and communicating superior customer value. |
| | | MMS CO2.1.4 | This module will give the student a very broad understanding of what marketing is all about and the vital role that it plays in every organization, every department and every specialization. |
| | | MMS CO2.1.5 | The module will help the student to identify and solve many business problems by using a marketing perspective, as a universal |
| | Financial Management | MMS CO2.2.1 | To gain in-depth knowledge of corporate finance and understand the functions of finance management. |
| | | MMS CO2.2.2 | Students should learn to analyze corporate financial statements and other parts of the annual report. |
| | Operations Research | MMS CO2.3.1 | To know optimizing techniques |
| | | MMS CO2.3.2 | To understand its use in decision making in business |
| | | MMS CO2.3.3 | To Identify and develop operational research model from real system |
| | | MMS CO2.3.4 | To appreciate the mathematical basis for business decision making |
| | Business Research Methods | MMS CO2.4.1 | To understand the importance of research and various methods that researcher used to investigate problems |
| | | MMS CO2.4.2 | Applying Modern Analytical tools for Business Management Decisions |
| | | MMS CO2.4.3 | To derive strategies from the research |
| | | MMS CO2.4.4 | To understand the challenges in collecting the data collection and analysis |
| | | MMS CO2.4.5 | To interpret the data to make meaningful decisions. |
| | Human Resource Management | MMS CO2.5.1 | To prepare a student for a career in industry and services |
| | | MMS CO2.5.2 | To facilitate learning in modern concepts, techniques and practices in the management of human resources |
| | | MMS CO2.5.3 | To expose the student to different functional areas of Human Resource Management to enhance the effectiveness. |
| | Analysis of Financial Statements | MMS CO2.6.1 | To understand the advanced tools used in financial statement analysis and financial reporting. Students should learn to do in-depth analysis of the performance of a company |

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| | Entrepreneurship Management | MMS CO2.7.1 | To gain an understanding of entrepreneurship, as well as to realize and harness the potential of new ventures and start-ups |
| | | MMS CO2.7.2 | To acquaint the students with both the theory and practice of Entrepreneurship |
| | | MMS CO2.7.3 | To re-orient the outlook of students towards new business ventures and start ups and also to help them to look at these as a possible career option |
| | Management Information Systems | MMS CO2.8.1 | To understand the basic concept data and information , Framework / structure and role of Information and Information Systems for business |
| | | MMS CO2.8.2 | Determining Information Needs for an individual & Organization for decision making process. |
| | | MMS CO2.8.3 | To understand the requirement & analysis of MIS across the functions of the Management and Sectors of the industry and business |
| | | MMS CO2.8.4 | To emphasis the Information System Development Process and Security/Privacy of MIS |
| III (Common Subject) | International Business | MMS CO3.1.1 | To develop a deep understanding of International Management |
| | | MMS CO3.1.2 | To develop the analytical ability of the student to attain an insight into International Management contexts |
| | Strategic Management | MMS CO3.2.1 | To appreciate the role of Strategic thinking in changing business environment |
| | | MMS CO3.2.2 | To understand the process of Strategy Formulation, Implementation & Evaluation |
| | | MMS CO3.2.3 | Focus on application & decision making |
| III (Finance) | Financial Markets and Institutions | MMS COFin3.1.1 | To understand different components of the Indian Financial system and their functions. |
| | | MMS COFin3.1.2 | To comprehend various products issued through different financial institutions in the primary and secondary markets. |
| | | MMS COFin3.1.3 | To understand the fixed income market, the different instruments and concepts related to it. |
| | Corporate Valuation and Mergers & Acquisitions | MMS COFin3.2.1 | To understand the process and set of procedures to be used to estimate the value of a company. |
| | | MMS COFin3.2.2 | To learn to make strategic decisions in M&A to enhance a company's growth. |
| | Security Analysis and Portfolio Management | MMS COFin3.3.1 | To understand the factors affecting the prices of different assets and to create an optimum portfolio based on given risk conditions. |
| | | MMS COFin3.3.2 | To understand the need for continuous evaluation and review of the portfolio with different techniques. |

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| | Financial Regulations | MMS COFin3.3.3 | To learn technical analysis to predict price movements based on indicators and forecasting techniques. |
| | | MMS COFin3.4.1 | To understand the regulations and its framework involved in financial system. |
| | | MMS COFin3.4.2 | To learn major intricacies of financial regulations. |
| | Derivatives and Risk Management | MMS COFin3.5.1 | To understand the concepts related to derivatives markets and gain in-depth knowledge of functioning of derivatives markets. |
| | | MMS COFin3.5.2 | To learn the derivatives pricing and application of strategies for financial risk management. |
| | | MMS COFin3.5.3 | To acquaint learners with the trading, clearing and settlement mechanism in derivatives markets. |
| III (Finance Electives) | Investment Banking | MMS COFin3.6.1 | The main objective of the course is to provide students with the necessary theoretical and conceptual tools used in investment banking. |
| | | MMS COFin3.6.2 | This course will provide an introduction and general understanding of investment banking activities. |
| | | MMS COFin3.6.3 | The final objective of this course is to show how corporate governance, ethics and legal considerations factor into investment banking deals. |
| III (System) | Database Management System & Data Warehousing | MMS COSys3.1.1 | To understand the introduction, Meaning and Definition of Database, Database Environment |
| | | MMS COSys3.1.2 | To understand the Data Models : The importance of data models, Basic building |
| | | MMS COSys3.1.3 | Understand applications of Database Management System(DBMS) |
| | | MMS COSys3.1.4 | To understand the Relational Database Management System(RDBMS) |
| | Enterprise Management Systems (EMS) | MMS COSys3.2.1 | To understand the Enterprise Resource Planning (ERP) - Meaning and Concept of ERP, Functional view of business processes and how they are integrated using an ERP, Merits and Demerits of ERP |
| | | MMS COSys3.2.2 | To understand the Enterprise Content Management – Role of content management |
| | | MMS COSys3.2.3 | To understand the applications areas of ERP, in various industry verticals and business |
| | | MMS COSys3.2.4 | To understand Enterprise Portals – Concept of an enterprise portal |
| | Big Data and Business Analytics | MMS COSys3.3.1 | To understand the Introduction to Big Data and Business Analytics and its applications |
| | | MMS COSys3.3.2 | To understand the Business Analytics Cycle Introduction, Analytical Tools & Methods |

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| | | MMS COSys3.3.3 | To understand Data Mining & decision Making concepts, Predictive Analysis, Forecasting Optimization, Simulation, and Business |
| | | MMS COSys3.3.4 | To understand the Data Driven Prediction Methods NLP, Regression, Correlation, Cluster Analysis, Artificial Neural Networks, BI Tools & Applications |
| | Knowledge Management | MMS COSys3.4.1 | To understand the introduction to Meaning of data, information, knowledge |
| | | MMS COSys3.4.2 | To Know the conceptual background and framework of KM |
| | | MMS COSys3.4.3 | Understand the KM Foundations and Solutions KM Foundations |
| | | MMS COSys3.4.4 | To know the Organizational Structure, Culture, Communities and KM practices, Information Technology as an enabler. |
| | Software Engineering | MMS COSys3.5.1 | To understand the in details software development process with issues /challenges In analysis, design, implementation ,maintenance |
| | | MMS COSys3.5.2 | Ability to analyze, design, verify, validate, implement, apply and maintain software systems. |
| | | MMS COSys3.5.3 | To help students to develop skills that will enable to construct high quality software and reliability. |
| | III (System Electives) | Data Mining and Business Intelligence | MMS COSys3.6.1 |
| MMS COSys3.6.2 | | | To understand the framework of Classification on Data Mining system |
| MMS COSys3.6.3 | | | Understand the Data Mining Techniques: Introduction, Statistical Perspective on Data Mining, Statistics-need and algorithms. |
| MMS COSys3.6.4 | | | Focus on Business Intelligence |
| III (HRM) | Training & Development | MMS COHR3.1.1 | Learning the intricacies of process of training and development and audit |
| | Compensation and Benefits | MMS COHR3.2.1 | To understand the concept of compensation, various elements, inflation, laws related to compensation, variable pay and income tax |
| | Competency Based HRM and Performance Management | MMS COHR3.3.1 | To provide both theoretical and application-oriented inputs on competency mapping and developing mapped competencies. |
| | | MMS COHR3.3.2 | To understand the concept of competency and competency based HR practices. |
| | | MMS COHR3.3.3 | To understand the various approaches towards building a competency model |
| | | MMS COHR3.3.4 | To understand how to integrate the applications of competency model with other HRM functions. |

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| | Labour Laws and Implications on Industrial Relations | MMS COHR3.4.1 | Understanding Nature and Importance of Labour Laws |
| | | MMS COHR3.4.2 | To understand various legislations with their history, basic provisions & case laws |
| | | MMS COHR3.4.3 | To study current amendments in Labour laws |
| | | MMS COHR3.4.4 | Highlight Labour Laws with IR implications |
| | Human Resource Planning and Application of Technology in HR | MMS COHR3.5.1 | To understand the concept of HR Planning and application of technology in HR |
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| III (HRM Electives) | Employee Branding and Employer Value Proposition | MMS COHR3.6.1 | Concept of Employee Brand |
| | | MMS COHR3.6.2 | Concept of Employer Value Proposition |
| | | MMS COHR3.6.3 | Creating and Nurturing Employee Brand |
| III (Operations) | Supply Chain Management | MMS COOpt 3.1.1 | Familiarize with the basic concepts of Logistics Management in relation to Inbound Logistics, Process Logistics, and Outbound Logistics phases of business. |
| | | MMS COOpt 3.1.2 | To explore the major elements of supply chain and expose to leading edge thinking on supply chain strategy, Designing supply chain, customer satisfaction; inventory management; risk management, alliances, issues and challenges, performance measurement. |
| | Operations Analytics | MMS COOpt 3.2.1 | To understand basic aspects of analytics and evaluation |
| | | MMS COOpt 3.2.2 | To learn various analytical techniques applied in complex real life situations |
| | | MMS COOpt 3.2.3 | To be able to scale up an academic model to workable practical model by carrying the process of analytical framework. |
| | Service Operations Management | MMS COOpt 3.3.1 | Understanding various types of Service Industry |
| | | MMS COOpt 3.3.2 | Site selection for service location |
| | | MMS COOpt 3.3.3 | Role of Operations for Profitability in Service industry |
| | | MMS COOpt 3.3.4 | Inventory management in Service industry |

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| | Manufacturing Resource Planning and control | MMS COOpt 3.4.1 | To understand importance of manufacturing resources planning and control to achieve continuous improvement in the better performance. |
| | | MMS COOpt 3.4.2 | To give knowledge of quantitative methods as well as various tools of resources planning like MRP1, MRP2 & ERP for decision making in operations. |
| | Materials Management | MMS COOpt 3.5.1 | Importance of Materials Management w.r.t. Business |
| | | MMS COOpt 3.5.2 | Learning various aspects of Purchase & warehousing |
| | | MMS COOpt 3.5.3 | Understanding documents control w.r.t. Material movement |
| | | MMS COOpt 3.5.4 | Materials planning with quantitative models |
| | III (Operations Electives) | International Logistics | MMS COOpt 3.6.1 |
| III (Marketing) | Sales Management | MMS COMkt 3.1.1 | To understand function of sales and its importance |
| | | MMS COMkt 3.1.2 | To comprehend the art of managing the sales force |
| | | MMS COMkt 3.1.3 | To motivate and manage sales force effectively |
| | | MMS COMkt 3.1.4 | To develop critical thinking skills and situational leaderships |
| | Marketing Strategy | MMS COMkt 3.2.1 | To understand and predict changes in the macroeconomic environment and its impact on marketing programs |
| | | MMS COMkt 3.2.2 | To develop an ability to respond rapidly to changes driven by consumer behaviours / new technologies etc. |
| | Consumer Behaviour | MMS COMkt 3.3.1 | An understanding of the pre and post purchase consumer behaviour. |
| | | MMS COMkt 3.3.2 | To develop conceptual insights into key aspects such as social, psychological and other factors that influence consumer behaviour. |
| | Services Marketing | MMS COMkt 3.4.1 | To familiarize students to basic concepts and decision making processes involved in Services Management |
| | | MMS COMkt 3.4.2 | To help students to understand application of these concepts to various industries in service sector |
| | Product and Brand | MMS COMkt 3.5.1 | To expose and sensitize the students with the practices of product and brand management. |

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| | Management | MMS COMkt 3.5.2 | To understand the key issues in Product and Brand Management | |
| III (Marketing Electives) | Marketing Research & Analysis | MMS COMkt 3.6.1 | This course is designed to acquaint students with the marketing research process, applications and statistical tools & techniques | |
| | | MMS COMkt 3.6.2 | This course will help students explore different approaches of Marketing research and acquaint them with contemporary marketing research practices. | |
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| IV (Common Subject) | Project Management | MMS CO4.1.1 | To introduce students of Management to concepts of Project | |
| | | MMS CO4.1.2 | To apply and evaluate success parameters of cost ,time and quality in project management | |
| | | MMS CO4.1.3 | To apply various techniques as cpm/pert/earned value analysis and projected financial Statements | |
| | | MMS CO4.1.4 | To enable student to conceive an idea, evaluate it's feasibility and make it workable. | |
| IV (Finance Electives) | Commercial Banking | MMS COFin 4.1.1 | To understand the concepts and fundamentals of Commercial Banking, | |
| | | MMS COFin 4.1.2 | To understand the Structure and growth of banking and various services rendered through commercial banks. | |
| | Venture Capital and Private Equity | MMS COFin 4.2.1 | To develop general understanding of the venture capital and private equity industry globally and the various players involved. | |
| | | MMS COFin 4.2.2 | Provide an understanding of the private equity investment process starting from fund raising to exiting. | |
| | | MMS COFin 4.2.3 | Develop analytical valuation and deal structuring techniques used in venture capital and buyouts. | |
| | | MMS COFin 4.2.4 | To prepare students for future jobs in VCPE and related industries. | |
| | IV (System Electives) | Managing Technology Business & IT Resource Management | MMS COSys 4.1.1 | To understand the Need and Significance of IT resource management |
| | | | MMS COSys 4.1.2 | Understand applications of Determining IT and Information System's Resource Needs and Business |
| MMS COSys 4.1.3 | | | IT & Information Systems resources Implementation and Acceptance | |
| IV (HRM Electives) | OD and Change Management | MMS COHr 4.1.1 | Basics of Change Management | |
| | | MMS COHr 4.1.2 | Understanding OD Approaches and Models | |

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| | | MMS COHr 4.1.3 | Understanding Organizational Development – Diagnostics |
| | | MMS COHr 4.1.4 | Different Strategies, Approaches and Models |
| IV (Operations Electives) | Operations Outsourcing and Offshoring | MMS COOpt 4.1.1 | To understand the size & extent of Outsourcing & Offshoring |
| | | MMS COOpt 4.1.2 | To know the risks & benefits of Outsourcing & Offshoring |
| | | MMS COOpt 4.1.3 | To understand the decision making process for Outsourcing & Offshoring |
| | | MMS COOpt 4.1.4 | Financial Evaluations for the Outsourcing & Offshoring |
| IV (Marketing Electives) | Integrated Marketing Communications | MMS CO 4.1.1 | To understand how key elements of IMC i.e. Advertising, Public Relations, Sales Promotion, Direct Marketing are integrated. |