Bachelor of Technology (Information Technology)

Program Outcome

PO-1) The graduates are able to develop an ability to apply knowledge of mathematics, science and engineering appropriate to the discipline.

PO-2) The graduates are able to apply mathematical foundations, algorithmic principles and information technology theory in modeling, design and conduct of experiments as well as data interpretation and analysis.

PO-3) The graduates are able to develop an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.

PO-4) The graduates are able to develop an ability to identify, formulate and solve real engineering problems and understand the global impact of engineering solutions.

PO-5) The graduates are able to develop an ability to function effectively on multidisciplinary teams to accomplish a common goal.

PO-6) The graduates are able to develop an understanding of professional, ethical, legal, security and social issues as well as responsibilities.

PO-7) The graduates have good knowledge of contemporary issues and are able to communicate effectively with a range of audiences.

PO-8) The graduates are able to recognize the need for lifelong learning and are able to apply the techniques, skills and modern engineering tools necessary for engineering practice.

PO-9) The graduates are able to apply the fundamentals of mathematics, science and engineering knowledge to understand, analyze and develop computer programs in the areas related to algorithms, multimedia, big data analysis, machine learning, artificial intelligence and networking for efficient design of IT-based systems of varying complexity.

PO-10) The graduates are able to apply appropriate techniques and modern engineering hardware and software tools for the design and integration of information technology and related technologies, to engage in lifelong learning for the advancement of technology and its adaptation in multi-disciplinary environments.

PO-11) The graduates are able to implement professional engineering solutions for the betterment of society keeping the environmental context in mind, be aware of professional ethics and able to communicate effectively.

Course Outcome

SI. No.	Course Code	Course Name	Learning Outcomes
SEMESTER-I		
1.	HS 1102	Organizational Behavior and Industrial Psychology	CO1. The course explains different models used to explain individual behavior, Develops learning about organizational culture, its design .Describe the various problematic issues due to individual behavior and their resolution. Students will understand different perspectives of personality.CO2. To apply differential calculus to notions of curvature. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.
			CO2. Understanding will develop among students about Perception and its various perspectives how it affects individual behavior. Learning Of work related attitude i.e job commitment and involvement will enhance job satisfaction. Explanation about Motivation its need for enhancing employee performance.
			CO3. Summarize the factors that affect group dynamics. Basic understanding about benefits of working in groups as well as various stages of group development.
			CO4. Develops understanding about Concept and need of effective communication in the organizations. Also depict Leadership concept with the help of various leadership theories.
			CO5. Three Level Structure at any organization, which shows the hierarchy and cross diversified culture at organization. Develops understanding among students about how to behave and act under cross cultural environment.
			CO6. Change is required for development and organizational effectiveness this is learning outcome for concerned topic as well as global workforce diversity and its management.
2.	MA 1101	Mathematics-I	CO1. To apply the essential tools of matrices including eigenvalues, diagonalization in a comprehensive manner.
			CO2. To understand the properties of light and its application i.e. polarization, reflection, refraction and scattering.
			CO3. To apply differential calculus to notions of curvature. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well

SI. No.	Course Code	Course Name	Learning Outcomes
			towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines. CO4. To apply the effective mathematical tools for the solutions of differential equations. CO5. To apply integral calculus to notions to integrals. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
3.	CH 1101	Engineering Chemistry	CO1. Industrial use of water, issues related to. CO2. Electrochemistry is multidisciplinary science which can be applied to a variety of fields such as physical, chemical and biological sciences. The Understanding of fundamentals of Electrochemical reaction develops analytical thinking skills and empowers students for analyzing and solving environmental issues, updation of knowledge in the field develop critical thinking aptitude, Current problems related to environment due to pollution and contamination can be better understood. CO3. Understand the terminology associated with engineering thermodynamics and have knowledge of contemporary issues related to chemical engineering thermodynamics. Development of Ability to apply fundamental concepts of thermodynamics to engineering applications, It enhance Ability to estimate thermodynamic properties of substances/compounds (and chemical reactions) in gas and liquid states. CO4. Organic chemistry is integral part of life sciences and chemical sciences. Intended Outcomes for the course upon complete concept understanding- the student will be able to: Demonstrate an intermediate ability to use effective written and/or oral communication through the application of organic chemistry concepts and solving reasoning based problems in reaction mechanism, using the language of chemistry. Understanding of its fundamentals helps in developing critical thinking and analyzing problems. Understanding of Polymers and its synthesis mechanism. Planning of experiments and analyze the experimental data for synthesis of different polymers. CO5. Ability to characterize the fuels, Understanding of

SI. No.	Course Code	Course Name	Learning Outcomes
			thermodynamics and kinetics of combustion of various fuels, Understanding the ability to analyze the combustion mechanisms of various fuels, Understanding energy resources available naturally and synthetically, supply and demand of energy, Ability to understand rational use of energy, conservation practices required, Increase knowledge of latest technologies to conserve the energy and various explorations in the field such as fuel cells and hydrogen energy.
4.	CE 1101	Engineering Mechanics	CO1. Understanding of basic concepts of force system, moments and wrench. CO2. Ability to develop FBDs for various numerical to analyze and solve force system including trusses. CO3. To develop understanding about friction, its type and uses during numerical solving approach. CO4. To understand and use data related to rectangular and cylindrical coordinates. Ability to solve projectile motion numerical. CO5. Ability to develop and analyze MOI based numerical along with General plane motion and circular motion of rigid bodies. CO6. Ability to develop understanding about Impulse and momentum, Collision including numerical solving approach.
5.	ME 1101	Elements of Mechanical Engineering	CO1. Understanding of basic concepts of different forms of energy and its applications. CO2. Ability to develop basic concepts about thermodynics and to solve numerical involving heat and work. CO3. To develop understanding about different type of steam generators and their applications. CO4. To understand the basic concepts of prime movers and its various types along with the use. CO5. Ability to develop understanding about different types of power plants with relative merits and demerits. CO6. To understand the working procedure of VARS, VCRS along with different AC systems.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO7. Ability to develop understanding about Metals and their properties. CO8. Ability to develop understanding about various heat treatment processes.
6.	ME 1103	**Workshop**	CO1. Understanding of basic concepts and application of different tools used in black smithy section along with job making. CO2. Ability to develop basic concepts about various operative carpentry tools and to perform jobs during practical sessions. CO3. To develop understanding about different types of fitting tools and job making. CO4. To understand the basic concepts of furnce along with pattern making during practical sessions.
		SEMESTER-II	
7.	HS 1205	**Communicative English**	CO1. Grip on sentence framing while writing as well as speaking. CO2. How to avoid common mistakes while writing learning objectives. CO3. Participates in different events such as role play, debate, extempore. CO4. Locating main idea, sequence of events and correlating things. CO5. Ability to present thoughts in limited words. CO6. Communication in office. CO7. To describe skills, education, experience and achievements with proper grammar format. CO8. To learn to communicate effectively in business interaction, business documents with proper etiquette. CO9. How to pronounce well and understand the transcript.

SI. No.	Course Code	Course Name	Learning Outcomes
8.	MA 1202	Mathematics-II	CO1. The objective of this course is to familiarize the prospective engineers with techniques in Infinite series, Fourier Analysis, Laplace Transform, Integral calculus, Vector calculus. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.
9.	PH 1201	Physics	CO1. To impart knowledge on the concepts of electrostatics, electric potential, energy density and their applications. To impart knowledge on the concepts of magneto statics, magnetic flux density, scalar and vector potential and its applications. CO2. To understand the properties of light and its application i.e., polarization, reflection, refraction and scattering. CO3. Understand the meaning of polarization. Understand the property of optical activity of certain materials. CO4. To Understand the Theory of relativity. CO5. To Know the Difference between Classical Mechanics to quantum mechanics. Also understand the ab time-dependent and time-independent Schrödinger equation for simple potentials like for instance the harmonic oscillator and hydrogen like atoms, as well as the interaction of an electron with the electromagnetic field quantum mechanical axioms and the matrix representation of quantum mechanics.
10.	EE 1201	Basic Electrical Engineering	CO1. This is the basic unit of basic electrical in which learner shall come to know about fundamental theorems of electrical which shall be useful thorough out the course. Also, learner shall become aware of DC. CO2. This unit is dedicated to fundamentals of ac. Learners shall come to know about all the theorems of ac. CO3. This unit is dedicated to 3-phase ac. Learners shall come to know about industrial use of ac. CO4. This part of syllabus is associated analogy of electrical circuit i.e. magnetic circuit. Learner shall come to know about properties and applications of magnetic circuits.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO5. This part of syllabus is associated analogy of electrical circuit i.e. magnetic circuit. Learner shall come to know about properties and applications of magnetic circuits.
11.	IT 1201	Fundamental of **Information** Technology	CO1. Have a basic understanding of personal computers and their operations. CO2. Knows the terms of motherboard, CPU, RAM, ROM, BIOS, CMOS and can express with their own words. CO3. Understand basic concepts and terminology of information technology. CO4. Understand the concept of Internet, Basic Internet Terms Getting Connected to Internet, Web Browser E-mail, G-mail Account, search Engines. CO5. Be able to identify issues related to information security. CO6. Understand the computer basics and principles of programming language design. Design flow-chart, algorithm and program logic. CO7. Acquire the knowledge of fundamentals, concepts and constructs of C programming. CO8. Understand the concept of data types, loops, functions, array, pointers, string, structures and files. CO9. Analyze problems, errors and exceptions. CO10. Ability to work with arrays of complex objects. CO11. Understanding a concept of functional hierarchical code organization.
12.	ME 1202	**Engineering Graphics**	CO1. Understanding of basic concepts of drawing and learn the techniques, skills, and modern engineering tools necessary for engineering practice. CO2. Exposure to engineering communication. CO3. To develop understanding about different types of two dimensional planes. CO4. Exposure to solid objects drawing. CO5. Ability to develop understanding about the concept of section of solids and their graphical representation.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO6. To understand the concept of development of surfaces of different shaped objects. CO7. Ability to develop understanding about intersection concepts of two solid objects. CO8. Exposure to the visual aspects of engineering design. CO9. Exposure to creating working drawings. CO10. Exposure to computer-aided geometric design.
		SEMESTER-III	
13.	CS 1301	**Object Oriented Programming**	CO1. Specify simple abstract data types and design implementations. CO2. Recognize features such as simple statement, conditional statement, loops and function. CO3. Recognize features of object-oriented design such as encapsulation, constructors, destructors, and composition of systems based on object identity. CO4. Recognize features of object-oriented design such as, polymorphism, inheritance, and composition of systems based on object identity. CO5. Name and apply some common object-oriented design patterns and give examples of their use.
14.	EC 1304	**Introduction to Communication System**	CO1. This module is dedicated for basics of signals (Periodic Signals) and their mathematical representation. Learner shall come to know about these basics which in turn shall make easy understanding to next modules. CO2. This module is dedicated for basics of signals (Aperiodic Signal) and their mathematical representation. CO3. This is very basic module of Communication System. Learners shall come to know about basic building blocks of analog and digital communication. CO4. In this module concepts of Modulation associated with AM, FM and PM shall be given. CO5. This module is for all types of AM. In which techniques of their generation and detection shall be explained.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO6. Learners shall get the idea of techniques of Pulse Modulation with their types. Also, they will get idea of coherent and incoherent detection.
			CO7. Learners shall become well aware of very important receiver-Super heterodyne Receivers and their properties.
			CO8. Multiplexing is a technique in communication by which more than one signal are traversed in a single carrier. The learners shall become aware of techniques associated with this.
			CO9. This module is for generation and detection of FM signals by both direct and indirect methods.
			CO10. This module is for the concepts of Signal to Noise ratio. Readers will come to know about their significance and techniques of minimization of SNR.
			CO11. This Module deals with Television, its functioning and its types. Learner shall become aware of complete mechanism of Television.
			CO12. This is the last module of communication system form which learners shall become aware of all types of display technologies and their associated mechanism.
15.	EC 1303	Digital Electronics	CO1. Learner shall grab the basic Idea, principle and applications of Digital Electronics.
			CO2. Learner shall get very basic concepts which are highly essential for next modules of this subject. They will be aware of Logic Gates and other basic concepts.
			CO3. Learner shall get the idea of various types of combinational logic circuits.
			CO4. This module is dedicated to Logic Families. Learner shall get idea of its various types.
			CO5. Learner shall get knowledge of Sequential Circuit which output depends on present input as well as future output.
			CO6. This module is for Memory types. Learners shall get complete idea of Memory.
			CO7. This module is for Amplifiers. Learner shall become aware of its basic concepts.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO8. This module is dedicated to ICs which is one of the revolutionary components of electronics. This component reduced the size of electronic circuit in a great extent. Learners shall get complete idea of fabrication of various components on a single chip. CO9. In this module Oscillators shall be briefly explained for learners.
16.	CS 1301	**Mathematics-III**	CO1. The objective of this course is to familiarize the prospective engineers with techniques in ordinary and partial differential equations, complex variables, probability and statistics. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines.
17.	MA 1304	**Numerical Methods & Computational Techniques**	CO1. The objective of this course is to familiarize the prospective engineers with techniques in computer language, programming, Iterative Techniques, Polynomial approximation, Numerical integration, Solution of initial value problem. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines.
18.	EC 1301	**Basic Electronics**	CO1. Basic concepts of components of Electronics shall be provided to Leaners. CO2. This Course is dedicated to most basic component of electronics-Diode. Learners shall come to know about its construction, working principles and associated mechanisms. CO3. This module is for various applications of p-n junction diode. Lerner shall become well aware of applications of diode. CO4. Learner shall come to know about all types of special types od diode which has attractive specific applications. CO5. This is one of the very important Module by which learner will come to know about very basic transistor-BJT. CO6. Learner shall come to know about other types of transistors-FET & MOSFET, their construction, working principle and characteristics. CO7. This module is for Amplifiers. Learner shall become aware of its basic concepts.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO8. This module is dedicated to ICs which is one of the revolutionary components of electronics. This component reduced the size of electronic circuit in a great extent. Learners shall get complete idea of fabrication of various components on a single chip. CO9. Oscillators shall be briefly explained for learners.
		SEMESTER-IV	
19.	MA 1405	**Discrete Mathematical Structure & Graph Theory**	CO1. The objective of this course is to familiarize the prospective engineers with techniques in Set, relation and function, Propositional logic, Algebraic structure, Partially ordered sets, Introduction to Counting and Graph. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines.
20.	CE 1402	**Environmental Science**	CO1. Understanding develops among students about biotic and abiotic factors, Structure of an Ecosystem and Sustainability. CO2. Learning about Biodiversity and its three levels i.e. Genetic, Species and Ecosystem Diversity. Major Hotspot of Biodiversity in India and world. Brief concept of Pollution. CO3. Understanding about different types of pollution, Their sources, effects on both biotic and abiotic components and their remedies (management). CO4. Learning outcomes of this unit is to understand the harmful effects of chemicals substances on people, animals and abiotic components. CO5. Understanding about ecotoxicity characterization factors. CO6. Students will learn and understand various Acts for Environment Protection.
21.	EE 1412	**Microprocessor and It's Application**	CO1. Learner will come to know about functioning of CPU, timing diagram etc. in detail. CO2. Learner will able to get hands on practice by programming 8085 etc. CO3. Learner will become enabled after grabbing the knowledge of addressing mode and instruction set.

SI. No.	Course Code	Course Name	Learning Outcomes
22.	CS 1409	Database System	CO1. Understanding of basic DBMS concepts such as: database Architecture, schema & various database Models. CO2. For a given specification of the requirement design the databases using E Rmethod. CO3. For a given query write relational algebra expressions for that query and optimize the developed expressions. CO4. To understand and use data manipulation language to query, update, and manage a database. For a given specification construct the SQL queries for Open source and Commercial DBMS -MYSQL, ORACLE, and DB2. CO5. Ability to develop and create various integrity constraint on the given schema and test the functional dependency for the given schema CO6. To develop understanding of the given specification of the requirement designs the databases using E R method and normalization. CO7. To develop understanding query processing and to optimize its execution using Query optimization algorithms. CO8. For a given transaction-processing system, determine the transaction atomicity, consistency, isolation, and durability.
23.	CS 1403	Data Structure	CO1. For a given algorithm student will able to analyze the algorithms to determine the time and computation complexity and justify the correctness. CO2. For a given problem of Stacks, Queues and Circular Queue, student will able to implement it and analyze the same to determine the time and computation complexity. CO3. For a given problem of linked list, circular linked list, doubly linked list, linked stack and linked queue, student will able to implement it and analyze the same to determine the time and computation complexity. CO4. For a given problem of binary tree using linked list or array concept, student will able to implement it and analyze the same to determine the time and computation complexity.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO5. Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort, Linear Search, Binary Search, Hashing and compare their performance in term of Space and Time complexity.
24.	CS 1402	**Computer Architecture**	CO1. To develop ability of the basic of computer Architecture. CO2. Develop the understanding about Addressing and Memory control CO3. Ability to develop understanding of various memories and data transfer. CO4. Understanding of various concepts of parallelism and architectural classification. CO5. Ability to understand parallel processors and their requirements. CO6. To develop understanding of SIMD Array processors.
		SEMESTER-V	
25.	CS 1512	**Formal Languages & Automata Theory**	CO1. Ability to develop basic concepts of computational techniques and ability to design Finite Automata & their various types like Deterministic and Non-Deterministic nature. CO2. Ability to develop understanding and designing Regular languages through Regular Expressions. CO3. To understand the limitations of regular languages and ability to develop understanding about minimization of automata. CO4. Ability to develop understanding and designing of context Free Languages through Context Free Grammar and their applications. CO5. To develop ability to design Push down Automata(PDA) on the given language or for the specific computational Task. CO6. Ability to develop understanding various normal forms and clouser properties. CO7. Ability to develop understanding and designing of Turing Machine and their properties. CO8. Ability to understand various Classes of intractable problem like n type, p type, np type etc.

SI. No.	Course Code	Course Name	Learning Outcomes
26.	EC 1505	Analog Electronics	CO1. This is very basic module of Analog Electronics where learners shall get the idea behind very basic concepts of amplifiers. CO2. This module is dedicated for dedicated to analysis of types of transistor configuration and their analysis. Learners shall get complete idea of High and Low frequency analysis of Transistors. CO3. This module is for series and parallel connection of amplifiers. Along with this learner shall get the idea of Bootstrapping of Emitter Follower too. CO4. This module is important as per short notes point of view. Learner shall be aware of important properties of multistage amplifiers. CO5. This is analytical module. Learners shall come to know about "incremental analysis" of CS amplifiers at Low and High frequencies. CO6. This module is important as per short notes point of view. Learner shall be aware of types of noises in electronics. CO7. Learners shall become well aware of "Power Amplifiers" and "Complementary Symmetry Amplifiers".
27.	CS 1517	Compiler Design	CO1. Ability to develop basic understanding about phases of compiler. CO2. To develop basic understanding of tokens, lexical analyzer. CO3. Ability to develop understanding and designing of various types of parsers. CO4. To develop basics understanding of Syntax directed Translation. CO5. Develop understanding of Types Checking of various expressions. CO6. To develop and design the concept of symbol table. CO7. Ability to develop intermediate code generation of the specific languages using the concept of Three Address Code. CO8. Ability to develop code using various techniques like DAG, Dynamic programming.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO9. Ability to understand various Error Detection and Recovery techniques. CO10. Ability to develop optimized code on the basis of various concepts like code movement, dead code elimination etc.
28.	IT 1505	Web Technology	CO1. Describe the greedy paradigm and explain when an algorithmic design situation calls for it. For a given problem develop the greedy algorithms. CO2. Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms. Derive and solve recurrence relation. CO3. Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. For a given problems of dynamic-programming. CO4. Develop the dynamic programming algorithms, and analyze it to determine its computational complexity. CO5. For a given model engineering problem model it using graph and write the corresponding algorithm to solve the problems. CO6. Explain the ways to analyze randomized algorithms (expected running time, probability of error). CO7. Explain what an approximation algorithm is. Compute the approximation factor of an approximation algorithm (PTAS and FPTAS).
29.	CS 1514	Computer Networks	CO1. Brief knowledge about component of computer network, hardware as well as software need in communication purpose. Clear understanding about network protocol and functionality of the entire layer in OSI model. CO2. Able to know different types of wired as well as wireless medium in computer network and standard used in physical layer of OSI Model. CO3. To be able to define frame structure of MAC layer, develop mechanism for error control and flow control, use of piggybacking concept to reduce communication overhead. CO4. Able to know about slotted ALOHA and ALOHA used in Random access protocol in OSI model.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO5. Complete details about collision in computer network, able to get control over collision detection as well as avoidance during message send and receive.
			CO6. Clear understanding on routing algorithm, how to find best path during communication of any kind of message, explanation about working principle of swith and bridge.
			CO7. Details about all designing issues come under network layer of OSI model, how function work in network layer.
			CO8. Recognize the technological trends of Computer Networking.
			CO9. Discuss the key technological of link state protocol and other in the Network. Evaluate the challenges in building networks and solutions to TCP/IP, OSPF and different gateway.
30.	CS 1505	System Programming	CO1. To understand brief concept about system programming. And its component like translator, linker, loader etc.
			CO2. Capable to know and design algorithm for implementation of translator.
			CO3. To be able to secure knowledge to use concept of MACRO and avoid redundant code as well as eliminate daed code in ALP.
			CO4. Able to calculate memory address like absolute address, Reloadable address.
			CO5. To be able to understand all feature of Compiler, To implement one pass, Two pass and multipass compiler.
			CO6. Capable to know and design algorithm for implementation of translator.

SEMESTER-VI

SI. No.	Course Code	Course Name	Learning Outcomes
31.	CS 1618	Artificial Intelligence	CO1. Student will able to learn about basics of AI, Prolog and LISP.
			CO2. Student will able to learn about different types of searching concepts followed by AI machine to search any knowledge efficiently.
			CO3. Student will able to learn about different types of algorithms used for developing computer games.
			CO4. Student will able to learn different kinds of representing knowledge into knowledgebase od AI machine.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO5. Student will able to types of reasoning done in AI machine and mathematical theorems used in AI applications.
			CO6. Student will able to how to develop a machine for generating and understanding natural languages like English etc.
			CO7. Student will able to learn different application areas of artificial intelligence and find problem definitions for their projects.
32.	IT 1608	Visual Programming	CO1. Specify simple abstract data types and design implementations, using abstraction functions to document them.
			CO2. Recognize features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity.
			CO3. Name and apply some common object-oriented design patterns and give examples of their use.
			CO4. Design applications with an event-driven graphical user interface.
			CO5. Implement the isolation property, including locking, time stamping based on concurrency control and Serializability of scheduling.
			CO6. Design Web applications with an event-driven graphical user interface.
33.	IT 1614	Software Engineering	CO1. To provide the idea of decomposing the given problem into Analysis, Design, Implementation, Testing and Maintenance phases.
			CO2. Demonstrate knowledge of the engineering and management principles and apply these to one's own work, to manage projects and in multidisciplinary environments.
			CO3. Apply the knowledge of software engineering to the solution of complex engineering problems related to real life.
			CO4. Describe data models, life cycle model, Understanding of different software architectural styles, Understanding of implementation issues such as modularity and coding standards.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO5. Understanding of software testing approaches such as unit testing and integration testing and describe software measurement and software risks. CO6. Understanding of software evolution and related issues such as version and cost management. Understanding on quality control and how to ensure good quality software.
34.	IT 1610	**Data Mining & Warehousing**	CO1. Understand basic concepts and terminology of data mining and warehousing. CO2. Understand the Decision Trees, Generating Association Rules, K-Mear Algorithm, Genetic learning. CO3. Recognize features of KDD Process model, Noisy data, Missing data, Data Transformation. CO4. Ability to work with Database and also design the Data warehouse. CO5. Explain the Evaluation criteria, Tools, Computing Test Set Confidence Intervals. CO6. Understand the concept of Feed – Forward Neural Networks, NN Training. CO7. Concept of Statistical Techniques. CO8. How to use the Specialized Techniques.
35.	IT 1606	**Operating Systems**	CO1. Student will able to learn about basics of Operating systems, their types and applications. CO2. Student will able to learn about how to create processes and threads. CO3. Student will able to learn about, Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time. CO4. Student will able to learn different kinds of representing knowledge into knowledgebase od AI machine. CO5. Student will able to types of reasoning done in AI machine and mathematical theorems used in AI applications.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO6. For a given specification of memory organization develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time.
			CO7. Design and implement file management system.
			CO8. For a given I/O devices and OS (specify) develop the I/O management functions in OS as part of a uniform device abstraction by performing operations for synchronization between CPU and I/O controllers.
36.	CS 1606	Design & Analysis of Algorithms	CO1. For a given algorithms analyze worst-case running times of algorithms based on asymptotic analysis and justify the correctness of algorithms. Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms. Derive and solve recurrence relation.
			CO2. Describe the greedy paradigm and explain when an algorithmic design situation calls for it. For a given problem develop the greedy algorithms.
			CO3. Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. For a given problems of dynamic-programming and develop the dynamic programming algorithms, and analyze it to determine its computational complexity.
			CO4. Explain the ways to analyze randomized algorithms (expected running time, probability of error). Explain what an approximation algorithm is. Compute the approximation factor of an approximation algorithm (PTAS and FPTAS).
			CO5. For a given model engineering problem model it using graph and write the corresponding algorithm to solve the problems.
		SEMESTER-VII	
37.	HS 1704	Personal Management & Industrial Relation	CO1. This module will develop understanding about Role and Responsibilities of Personnel Manager and department.
			CO2. Students will understand the concept of job Analysis, Its two methods Job Description and Job Specification.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO3. Explain The need and Various methods of Training. Develop understanding about Training removes deficiency of skills and knowledge.
			CO4. Elaborate The objective of Performance Appraisal and how it motivates employees to enhance their skills and make them more effective. Also the post effect of Appraisal system i.e. Promotion, Transfer and separation.
			CO5. Students will develop understanding about Compensation, types and methods of identifying compensation in the organization.
			CO6. This module explain health, Safety And welfare of employee in the organization.
38.	IT 1713	**Distributed Computing & It's Applications**	CO1. Understand the Different Forms of Computing.
			CO2. Concept of Client or Server side Programming.
			CO3. Use of Servelet and its application.
			CO4. Explanation of Java Server Page.
			CO5. Understand the Client View of a Session Bean, Session Bean Component Contract, and Session Bean Lifecycle.
39.	IT 1725	**Wireless & Mobile Communication**	CO1. Ability to develop overall concept wireless transmission like signals, antennas, multiplexing of signals.
			CO2. Ability to develop understandings about MAC layer and GSM.
			CO3. Ability develops to understand various IEEE 802.11 standards.
			CO4. Ability to develop understanding about Mobile IP and WAPWML.
			CO5. To develop understanding of small computing Techniques and its Architecture.
40.	IT 1709	**Information Security**	CO1. To develop basic understanding about the information security, threats and risk and their laws.
			CO2. To develop understanding of Cryptographic philosophy.
			CO3. Ability to develop and analyze various cryptographic methods based on Symmetric and Asymmetric Key cryptography.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO4. To develop understanding of Digital Immune System and the various malicious activity like Virus, Worms.
41.	IT 1722	**Distributed Database (Elective-II)**	CO1. Ability to develop the concept of Distributed Database System. CO2. Ability to develop the concept of various Distributed Database architectural Models. CO3. To develop the ability to design distributed database system. CO4. To develop the ability the concept of semantic data control. CO5. Develop the understanding of Transaction properties and various transaction types. CO6. To develop the understanding reliability of Distributed DBMS. CO7. Ability to develop the parallel database system.
42.	CS 1704	**Object Oriented Analysis and Design (Elective-I)**	CO1. Ability to develop understanding of object oriented model. CO2. To understand the concept of various techniques like Lik, Association, State diagram, object diagram etc. CO3. To develop the understanding the design methodology. CO4. Develop various case studies on relational database.
		SEMESTER-VIII	
43.	IT 1823	**XML Web Services**	CO1. Concept of XML and what is use of DTD. CO2. Understand the Web Services and its Data Types. CO3. Basic knowledge of SOAP. CO4. Understand the WSDL and Describing Web Services. CO5. Explanation of SOAP Tools and Component. CO6. Design applications with an event-driven graphical user interface. CO7. Implementation of Web Services. CO8. Concept of Managing the risks of Web Service.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO9. Design Web applications with an event-driven graphical user interface.
			CO10. Explain the framework and its application.
44.	IT 1824	Multimedia Technology & Application	CO1. Create a well-designed, interactive Web site with respect to current standards and practices.
			CO2. Demonstrate in-depth knowledge in an industry-standard multimedia development tools and techniques.
			CO3. The focus of this course will be on the integration of text, images, animation, audio, and video into Web-based applications.
			CO4. Students will work with all aspects of images, sound, video and will learn the cost involved in multimedia planning, designing, and producing as well as ways to present their skill in designing.
			CO5. Students able to describe the ways in which multimedia information is captured, processed, and rendered introduce multimedia quality of service (QoS) and access method.
			CO6. Define multimedia to potential clients.
			CO7. Identify and describe the function of the general skill sets in the multimedia industry in the field of Images.
			CO8. Identify the basic components of a multimedia project.
			CO9. Identify the basic hardware and software requirements for multimedia development and playback. This unit is an introduction to Web-based interactive media development. Students will learn to create interactive media using industry-standard authoring tools. Students will learn to create programming scripts for interactive user interfaces and complex components.
45.	IT 1815	Intrusion Detection	CO1. To develop understanding of system threats through intruders and unauthorized activity.
			CO2. To understand the Architecture of IDs and Ips.
			CO3. Ability to develop and implement interne security system.
			CO4. To understand the various Laws and Management system.

SI. No.	Course Code	Course Name	Learning Outcomes
46.	IT 1867	E-Commerce and ERP (Elective-III)	CO1. To develop overall understandings of the E-Commerce and the information Technology Act 2000. CO2. Ability to understand various model based on Transaction party like B2C, B2B, C2C, C2B etc. CO3. Ability to develop understanding about the Browsing Behavior and E-Branding. CO4. To develop understanding of Business Risk management and understanding of Firewall. CO5. Ability to understand digital payments and the risk associated with the transaction. CO6. To understand Architecture and major trends of E-suply chain Management. CO7. Ability to develop plans of various E-commerce projects. CO8. Ability to understand mobile commerce and wireless system. CO9. Develop ability to understand overall concept to ERP.
47.	IT 1874	Management Information System (Elective-IV)	CO1. Understanding will develop among students about concept of MIS and their application in Business Enterprises For making report and help in Decision making process. CO2. Students will be able to understand The Process of planning and its execution, And how to make MIS report. CO3. Students will know Decision making process and data collection source after going through this module. CO4. Develop the understanding about System Analysis And Design, Also Its classes and models. CO5. Elaborate understanding about MIS and its importance, also Development process model. CO6. Students will be able to understand BPR, and value system. CO7. Learning Outcome for This Module Will Be Understanding About MIS Application In Sectors Like Manufacturing And service. Brief Knowledge About Decision Support System.

SI. No.	Course Code	Course Name	Learning Outcomes
			CO8. By Going Through Various Cases Studies Students will be able to Analyze the Problems Occurred in the organization And answer questions mentioned in case.