B.Tech - Information Science and Engineering

Program Outcomes (POs)

- **PO1:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

- **PO2:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- **PO3:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

- **PO4:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

- **PO5:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

- **PO6:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

- **PO7:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

- **PO8:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

- **PO9:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

- **PO10:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

- **PO11:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

- **PO12:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

Program Specific Outcomes (PSOs)

- **PSO1: Information/Digital literacy:** A versatile individual who is dynamic to adopt changes in the trends of Information technology through the concepts of Information retrieval, Security and Analytics.

- **PSO2: Self-Directed Learning:** Ability to mine the data in the fields of Management and Information Science with the knowledge gained from programming skills and projects.

Course Outcomes (COs)

Batch:2017-2021

Semester	Course Code	Course Name	CO Statements
1	**17BS1MA01**	**Applied Engineering Mathematics-I**	**CO1:**Determine the power series expansion of the function with the help of mean value theorems **CO2:**Analyze the multivariable function for extreme values **CO3:**Apply multiple integrals to find area, surface area and volume **CO4:**Employ the method of reduction formulae to find surface area and volumes of evolution **CO5:**Solve first and higher order ordinary differential equations **CO6:**Model a physical phenomenon into a mathematical equation
	17BSCPY02	**Applied Physics**	**CO1:**Understand the role of physics in Engineering field **CO2:**Analyse the applications of physics for engineering problems **CO3:**Demonstrate the problem-solving ability to identify the solutions **CO4:**Construct the quantum model to explain the behaviour of a system at microscopic level **CO5:**Apply the properties of lasers to improve the optical fibre communication
	17BSCPY02L	**Physics Lab**	**CO1:**Demonstrate the working knowledge of optical, electrical and electronics experiments **CO2:**Illustrate the procedure to conduct the experiments and correlate their results **CO3:**Compare moduli of elasticity of given materials **CO4:**Interpret the diffraction of light to determine the wavelength of incident laser **CO5:**Examine the Fermi energy of a conductor and semiconductor **CO6:**Construct simple circuits to verify I-V characteristics of a diode, Stefan's constant, Planck's constant, Dielectric constant and frequency response of resonance circuit
	17ESCCV03	**Basics of Civil Engineering**	**CO1:** Knowledge of different fields of Civil Engineering, Building Materials and Planning of a Building **CO2:**Comprehend Resultant of Concurrent and Non-Concurrent Force Systems, Support Reactions, Concept of Centroid and Moment of Inertia **CO3:**Compute Resultant Forces, Centroid of Plane Figures, Moment of Inertia

	17ESCME04	**Basics of Mechanical Engineering**	**CO1:**Describe working of steam turgines, impulse and reaction turbines **C02:**Demonstrate knowledge on machine tools and basic manufacturing processes **CO3:**Explain working of two stroke and Four stroke IC engine **CO4:**Discuss on the basics of refridgeration and airconditioning systems **CO5:**Discuss on the orking Principles of power transmitting elements.and related actuators **CO6:**Demonstrate knowledge on basics of manufacturing processes and machine tools
	17ESCME05	**Engineering Graphics**	**CO1:** Indicate the basic entities and perspective of a technical drawing as per the BIS standards **CO2:**Construct the projection of points in various angles of projections manually and with SolidEdge **CO3:**Construct the projection of lines and planes in first angle projection manually and with SolidEdge **CO4:**Construct the projection of solids in first angle projection manually and with SolidEdge **CO5:**Construct the projection of solids in isometric perspective manually and with SolidEdge **CO6:**Generate orthographic and isometric views through CAD software
	17ESCME41L	**Worskshop Practice**	**CO1:**Demonstrate knowledge on the basics of casting, forming, machining, Joining processes **CO2:**Discuss on the concepts and programming related to CNC machines **CO3:**Demonstrate skill on fitting with square joint and V joint **CO4:**Demonstrate skill on carpentry works with dove tail joint and lap joint **CO5:**Demonstrate skill on carpentry works with dove butt joint. lap joint and T joint **CO6:**Perform casting of simple components
	17HSSC06	**Sociology and Elements of Indian History for Engineers**	**CO1:**Understand the fundamental concepts of Sociology and History **CO2:**Apply the sociological concepts with new technologies for overall growth **CO3:**Analyze the theoretical concepts and to reflect on them in contemporary social life **CO4:**Evaluate the knowledge of social change into developments of the society

2	**17BS2MA01**	**Applied Engineering Mathematics-II**	**CO1:**Apply double and triple integrals to find surface area and volume of solids **CO2:**Employ differentiation on vector point functions **CO3:**Analyze line, surface and volume integrals using vector point functions **CO4:**Apply Laplace Transforms to solve ordinary differential equations **CO5:**Analyze the solution of system of linear differential equations using Eigen value and Eigen vectors **CO6:**Test for consistency and solve system of linear equations
	17BSCCH02	**Applied Chemistry**	**CO1:**Have knowledge of basics of Nanomaterials and their application **CO2:**Understand the concepts of Fuels, corrosion and their importance in the engineering **CO3:**Ability to understand different types of pollutions and analysis of pollutants **CO4:**Interpret the replacement of conventional materials by polymers for domestic and industrial applications **CO5:**Have a knowledge of electrochemistry and Ability to analyze & design of energy storage devices
	17BSCCH02L	**Chemistry Lab**	**CO1:**Analyse the physical principle involved in the various instruments **CO2:**Relate the principles of the experiments to new application **CO3:**Perform different types of titrations in volumetric analysis **CO4:**Exhibit skills in performing experiments based on theoretical fundamentals **CO5:**Study and apply basic chemistry laboratory techniques for small/large scale water analysis and purification **CO6:**Improve cognitive skills in accordance with current engineering and technology developments
	17ESCEC03	**Basics of Electronics Engineering**	**CO1:**Explain the fundamentals and concepts of semiconductor devices and its application's **CO2:**Demonstrate knowledge on the basic structure and operation of transistor with different configurations for various applications **CO3:**Explain the basics of Communication System with transmission medium and modulation schemes **CO4:**Examine different analog & digital circuits
	17ESCEE04	**Basics of Electrical Engineeing**	**CO1:**Understand the basic laws used in electrical circuits, both DC & AC, Electrical Power Generation. **CO2:**Analyze the working of electrical machines. **CO3:**Distinguish between conventional and non conventional sources and their applications.

	17ESCEE34L	**Electrical and Electronics Lab**	**CO1:**Analysis of Resistive Circuits and Solution of resistive circuits with independent sources **CO2:**Analysis of Single Phase AC Circuits, the representation of alternating quantities and determining the power in these circuits **CO3:**Analysis of DC Circuits and practical demonstration of Kirchoff's laws
	17ESCCS05	**Problem Solving thorugh Programming**	**CO1:**Understand the components of computing systems and programming concepts **CO2:**Develop algorithms and flowchart for mathematical and scientific problems **CO3:**Exhibits the knowledge of programming basics with C program structure **CO4:**Develop modular programs using decision and control structures **CO5:**Demonstrate the usage of Pointers, arrays, strings and functions **CO6:**Implement programs to solve real world problems using programming feature
	17ESCCS05L	**Problem Solving throgh Programming Lab**	**CO1:** Formulate the algorithms for mathematical & computational problems **CO2:** Translate given algorithms to a working and correct program **CO3:**Demonstrate programming development tool, compiling, debugging, linking and executing a program **CO4 :**Exhibit programming knowledge by using appropriate construct to solve a given problem **CO5 :** Design to logical formulations to solve mathematical & computational **CO6:**Develop effectively the required programming components that efficiently solve computing problems in real world
	17HSS07	**Communicative English**	**CO1:**Explore new ideas in areas like presentations, group discussions and conversations **CO2:**Transform their pronunciation of English with basic understanding of phonetics **CO3:**Express fluently in flawless English with proper understanding of grammar and syntax **CO4:**Develop command in their language which would build their confidence **CO5:**Identify the salient features of literary texts to produce creative thinking and imaginative writing

3	**17CCC31**	**Data Structures and Algorithms**	**CO1:** Describe various types of data structures, operations and algorithms, Sorting and searching and File Structures. **CO2:** Analyze the performance of – Stack, Queue, Lists, Searching and Sorting techniques. **CO3:** Analyze the Non Linear Data Structures- Trees & Graphs **CO4:** Design and apply appropriate data structures for solving computing problems **CO5:** Use some formal design methods and programming languages which emphasize on data structures, rather than algorithms, as the key organizing factor in software design **CO6 :**
	17IS33	**Object Oriented Programming with C++**	**CO1:** Ability to understand the need to make ease of Programming by learning object-oriented concepts **CO2:** understand with hands-on the object-oriented features. **CO3:** understand the use of standard template libraries **CO4:** create program for any object-oriented applications. **CO5:** create generic applications **CO6 :** potential to create and implement file handling applications
	17BS3CS01	**Discrete Mathematics and Graph Theory**	**CO1:** understand Mathematical structures and operations **CO2:** learn the principles used in the analysis of Algorithms and learn the geometric and algebraic methods of representing objects **CO3:** understand map coloring problems and learn the theoretical and computational aspects of discrete structures of relations **CO4:** analyze about the Graph Theroy **CO5:** applying the fundamental principles of counting, Probability and mathmatical logic **CO6:** Evaluating relation and principle of inclusion and exclusion and Generating functions and recurrence relation

	17HSSC08	**Economics for Engineers**	**CO1:** Describe the fundamental theories and principles used in Engineering Economics and Management and to some extent are able to compare and evaluate them **CO2:** Llearn, compare and apply various cost concepts and analysis techniques **CO3:** Understand a business plan for an entrepreneurship project using economics and Management fundamentals **CO4:** Apply the knowledge and techniques, skills and methods to become successful project leaders **CO5:** Apply professional ethical principles and corporate social responsibility concepts in personal, financial and economic decisions for sustainable growth and development **CO6:** Analyze and think through basic economic problems of our country
	17CCC32	**Computer Organization and Architecture**	**CO1:** Understand basic structure of computer and demonstrate the execution of an instruction by CPU. Also, to identify different addressing modes for a given instruction. **CO2:** Perform computer arithmetic operations through register, memory transfers and implement using microprogramming. **CO3:** Work, configuration and protocols of peripheral devices. **CO4:** Familiarize with standards, protocols used for data transfer between peripheral devices, commercial processors available. To demonstrate the simulation of basic processor using open source tools. **CO5:** Evaluate performance of various processors and get familiarize with typical processors. **CO6:** Use open source tools to design processing unit.
	17CCC31L	**Data Structures and Algorithms Lab**	**CO1:** Compare various kinds of searching and sorting techniques **CO2:** Construct Linear and nonlinear data structures using arrays and linked list **CO3:** Develop Programs employing dynamic memory management **CO4:** Choose appropriate data structure to solve various computing problems **CO5:** Originate hash tables and collision resolution Techniques **CO6:** Identify suitable data structure and algorithm to solve a real world problem

	17IS33L	**Object Oriented Programming with C++Lab**	**CO1:** Write programs using C++ and learn its execution environment **CO2:** Apply programs to implement various computational tasks which requires loops and conditional statements **CO3:** Write programs using functions and packages **CO4:** Apply programs to implement the concept of exception handling using C++ **CO5:** Design object oriented programs to implement daily life problems and their solutions **CO6:** Create various applications
4	**17BS4MA01**	**Linear Algebra**	**CO1:** Solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion **CO2:** Demonstrate understanding of the concepts of vector space and subspace **CO3:** Apply principles of matrix algebra to linear transformations **CO4:** Use mathematical concepts in problem-solving through integration of modeling **CO5:** Analyze various algebraic problems **CO6 :** Apply concepts of linear equations
	17CIC41	**PROGRAMMING IN JAVA**	**CO1:** Define and understand Object Oriented programming concepts using basic syntaxes of control Structures, strings and function for developing skills of logic building activity **CO2:** understand classes, objects, members of a class and the relationships among them needed for finding the solution to specific problem **CO3:** Demonstrate how to achieve reusability using inheritance, interfaces and packages and describe how faster application development can be achieved. **CO4:** Design and create applications using JDBC connectivity **CO5:** create grpahic applications **CO6:** Create front end and back end applications
	17CIC42	**AUTOMATA THEORY AND LOGIC**	**CO1:** List computational devices according to their computational power, and tools which will allow us to tell if a device is powerful enough to solve a given computational problem **CO2:** Relate the concept of the grammar with the concept of programming language **CO3:** Design Solutions for problems related to Finite Automata, RE, CFG, PDA and Turing Machine. **CO4:** Ability to provide theoretical preparation of the study of programming languages and compilers. **CO5:** Analyze various problems and categorize them into P, NP, NP-Complete and NP Hard problems **CO6:** Apply the concepts of automata in system level

	17CIC43	**OPERATING SYSTEMS**	**CO1:** Differentiate between multiprocessing, multiprogramming, and multitasking. **CO2:** Analyze different CPU scheduling algorithms and disk scheduling algorithms, and solution to critical section problems **CO3:** Apply segmentation and paging techniques **CO4:** Compare file naming in Linux and Windows **CO5:** illustrate various disk scheduling algorithms. **CO6:** appreciate the need of access control and protection in an operating system.
	17IS44	**PROGRAMMING PARADIGMS**	**CO1:** understand the importance of programming languages and to know the detail compilation process **CO2:** Understand more about type casting and control structures available in different programming languages **CO3:** understand details of different procedure calls **CO4:** Analyse about object oriented programming languages **CO5:** Apply knowledge of subroutine and abstract data type **CO6:** Explore concurrency controls and exceptions
	17HSS04	**Business Communication and Presentation skills***	**CO1:** understand the basic concepts of business intelligence (BI), and knowledge discovery in databases **CO2:** Grasp the operation procedures of BI projects in an organization. **CO3:** learn the software tools/applications in BI, with emphasis on industrial case studies and practical applications **CO4:** Have an overall understanding of the major issues and applications in business intelligence and best practices for building successful BI projects **CO5:** appraise their priorities, strengths and interests in line with their chosen career, and achieve balance in life **CO6:** formulate a personal code of ethics, and a realistic blueprint for personal and professional success thus contributing to the welfare of all

	17CIC41L	**PROGRAMMING IN JAVA Lab**	**CO1:** Understanding of OOP concepts and basics of Java programming **CO2:** apply OOP and Java programming in problem solving **CO3:** extend his/her knowledge of Java programming further on his/her own **CO4:** Create different programms using packages **CO5:** Analyze various techniques with functions **CO6 :** Evaluate inhenritance using Java
	17CIC43L	**Operaing Systems Lab**	**CO1:** Analyze the OS using Synchronization **CO2:** Apply the concepts of Semaphore Using Java Program **CO3:** Apply the concepts of Scheduling using Java Programs **CO4:** Evaluate the concepts of Threads and process Using Java Program **CO5:** Apply the OS concepts Deadloacks and Semaphores in one program **CO6:** Analyze memory utlization using memory management
	17CIC51	**Probability, Statistics and Random Process**	**CO1:** Ability to solve various problems regarding probability and conditional probability **CO2:** Examine, analyze and compare probability distributions **CO3:** Prepare null and alternative hypothesis and test its validity based on random sample. **CO4:** Ability to solve various types of regression problems **CO5:** Ability to understand various queuing models **CO6 :** Analyze various statistics Problems

5	**17CIC52**	**Data Communication and Computer Networks**	**CO1:** Build an understanding of the fundamental concepts of Data communication along with layer models such as OSI and TCP/IP models **CO2:** Understand & Analyze the analog to Digital conversions and vice versa, Multiplexing and various types of transmission media used in data communication and methods to optimize utilization of their capacities. **CO3:** Analyze different types of switching networks and compare different transmission mediums **CO4:** Test various error detection and correction techniques employed in data link layer **CO5:** Analyze and compare congestion control protocols. **CO6:** Design and simulate various topologies using layer 2 and layer 3 devices.
	17CIC53	**Database Systems**	**CO1:** Construct Entity-Relationship (ER) model and also to learn different issues in the design and implementation of a Database system **CO2:** Demonstrate by providing solutions through Relational Algebraic expressions and structured query language commands. **CO3:** Construct SQL queries for retrieving multiple tuples using Iterators CURSORs and Triggers. **CO4:** Analyze the different normalization techniques by understanding the essential DBMS concepts **CO5:** Demonstrate the ACID properties of Transaction **CO6:** Apply techniques for achieving Concurrency control and for database recovery.
	17IS54	**Software Engineering**	**CO1:** Identify the key activities in managing a software project **CO2:** Compare different process models. **CO3:** Concepts of requirements engineering and Analysis Modeling **CO4:** Apply systematic procedure for software design and deployment **CO5:** Compare and contrast the various testing and maintenance **CO6:** Manage project schedule, estimate project cost and effort required

	17CIC55	**PARALLEL COMPUTING SYSTEM**	**CO1:** Explain the range of requirements that modern parallel systems have to address **CO2:** Define the functionality that parallel systems must deliver to meet some need **CO3:** Demonstrate the potential run-time problems arising from the concurrent operation of many (possibly a dynamic number of) tasks in a parallel system **CO4:** Justify the presence of concurrency within the framework of a parallel system **CO5:** Develop and analyze a parallel algorithm using the PRAM model **CO6:** Create the Parallel Computing environment using applications
	17CIC56	**WEB TECHNOLOGY**	**CO1:** Understand the need to make ease of Web Programming by learning scripting and markup languages **CO2:** Apply hands-on on scripting requirements. **CO3:** Generate graphics programming constructs **CO4:** Create server-side, client side applications **CO5:** Understand with hands-on on modules. **CO6 :** Create complete web application.
	17IS57	**PYTHON SCRIPTING**	**CO1:** create fundamental python constructs **CO2:** Apply the python object-oriented concepts **CO3:** Understanding basic modules in python **CO4:** Create SQLlite applications **CO5:** understand front-end and back-end modules **CO6:** Analyze the Socket, database and GUI modules
	17CIC53L	**Database Systems Lab**	**CO1:** Apply Data Definition Language, Data Manipulation Language, Data Control Language and Transaction Control Language commands on sample database. **CO2:** Create a Student database with necessary constraints and to get it populated with the data. **CO3:** Execute simple and complex queries on Student Database. **CO4:** Create Employee database with necessary constraints, populate it with the data and to execute queries on the database. **CO5:** Create Library database with necessary constraints, populate it with the data and to execute queries on the database. **CO6:** Demonstrate the learned concepts through exhibiting a mini project

	17CIC55L	**ParaLLEL COMPUTING SYSTEM Lab**	**CO1:** Apply Parallel programming using TCL **CO2:** Create a program to run the PCS using Open Mp **CO3:** Generate programs using MPI **CO4:** Analyze the programs using Binary search and sorting techniques to check parallel computing **CO5:** Create OpenMp environment for analyzing the data **CO6:** Evaluate various OpenMp environments
6	**17CIC61**	**ADVANCED COMPUTER NETWORKS**	**CO1:** Independently understand basic computer network technology and Identify the different types of network topologies and protocols. **CO2:** Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer. **CO3:** Analyze and compare IPV4 and IPV6 **CO4:** Identify the different types of network devices and their functions within a network and Familiarity with the basic protocols, VLANs, VTP , WAN, ATM in a networks **CO5:** Knowledge of contemporary issues in WIFI and 802.11 networks. **CO6:** Design and simulate various Real time Simulations case study
	17IS62	**OBJECT ORIENTED DESIGN AND SOFTWARE TESTING**	**CO1:** Explain the significance of Object Oriented Modeling **CO2:** Apply object oriented analysis process to real world problems **CO3:** Understand the importance of performing Dynamic modelling and functional modelling for solving real world problems **CO4:** Compare and contrast the object oriented design process as per the cases from real world solutions **CO5:** Study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods **CO6:** Understand the basics of Integration and Component-Based Software Testing
	17IS63	**MANAGEMENT INFORMATION SCIENCE**	**CO1:** Analyze the components, activities and strategies of Information system. **CO2:** Apply planning and maintenance strategies to the information systems **CO3:** Create the technologies like ERP, E-Business **CO4:** Understand E-Commerce, m-Commerce, wireless networks, mobile computing etc **CO5:** Identify the threats to information security **CO6:** Learn to protect information resources.

	17IS64	**DATA WAREHOUSING AND DATA MINING**	**CO1:** Apply database analysis and design techniques to the concept of Data Warehousing. **CO2:** Construct a data model for a case sample Data Warehouse project **CO3:** List and describe the core components of a Data Mining. **CO4:** Summarize the rational and key benefits of using Data Marts and construct a data model representing a Data Mart strategy. **CO5:** Explain the concept of Data Mining and list and describe the core components of a Data Mining initiative. **CO6:** Summarize the tools and approaches used in support of Data Mining and analyze sample data and identify correlations. To introduce advanced topics in data mining, applications and trends in data mining
	17ISDE651	**MACHINE LEARNING**	**CO1:** Understand the core concepts of Machine learning. **CO2:** Understand complexity of Machine Learning algorithms and their limitations. **CO3:** Exhibit knowledge of the different machine learning techniques. **CO4:** Characterize machine learning algorithms as supervised, semi-supervised, and **CO5:** Recognize the characteristics of machine learning that make it useful to real-world **CO6:** Choose the appropriate learning techniques to solve the given problems.
	17ISDE652	**NEURAL NETWORKS**	**CO1:** Demonstrate the socket program using TCP & UDP using Packet tracer **CO2:** Design single and multi-layer feed-forward neural networks; **CO3:** Implement linear and nonlinear models **CO4:** Perform the training of neural networks using various learning rules **CO5:** Understand the basic ideas behind most common learning algorithms for multilayer perceptrons, radial-basis function networks, and Kohonen self-organising maps. **CO6:** Apply neural networks to classification and recognition problems.

	17CIC61L	**Advanced compter networks lab**	**CO1:** Develop simple applications using TCP & UDP **CO2:** Develop simple applications using for multiple router communication **CO3:** :Develop the code for Data link layer protocol simulation using Packet Tracer **CO4:** Examine the performances of Routing protocol **CO5:** Experiment with congestion control algorithm using network simulator **CO6:** Demonstrate the learned concepts through exhibiting a mini project
	17IS64L	**DWDM Lab**	**CO1:** Apply concepts of Data mining using Java Programming **CO2:** Analyze data using Weka Tool **CO3:** Apply Clustering techniques using different data sets **CO4:** Apply Classification techniques using KNN, J48, Cosine similarity functions **CO5:** Compare various data using regression and transformation **CO6:** Evaluate the performance of the data by applying DM concepts
7	**17ISDE711**	**NETWORK MANAGEMENT SYSTEM**	**CO1:** underlay the network hardware, network topologies, and protocols **CO2:** Implement, manage and configure the network components from the centralized system. **CO3:** Design considerations of the network **CO4:** Expertise Web based management **CO5:** Apply the techniques used for data maintenance. **CO6:** Create the network with various management skills
	17ISDE713	**NETWORK PROTOCOL DESIGN**	**CO1:** Interpret the impact and challenges posed by IoT networks leading to new architectural models. **CO2:** Compare and contrast the deployment of smart objects and the technologies to connect them to network. **CO3:** Appraise the role of IoT protocols for efficient network communication. **CO4:** Elaborate the need for Data Analytics and Security in IoT. **CO5:** Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry. **CO6:** Apply knowledge on different protocols

	17ISDE722	**BIG DATA ANALYTICS**	**CO1:** Broad understanding of big data application areas **CO2:** understand the big data approaches used **CO3:** Analyze non-retional databases,the techniques for storing and processing large volumes of structed and unstructed data,as well as streaming data **CO4:** motivate and explain trade-offs in big data processing technique design and anaysis **CO5:** Apply the concepts of Big Data using various applications **CO6:** Analyze the data with different algorithms
	17ISDE731	**INFORMATION SECURITY**	**CO1:** Apply symmetric, asymmetric encryptions to message exchanges. **CO2:** Design mechanisms for authentication and identify the possible threats to each mechanism to protect against these threats. **CO3:** Use real-time communication security, email security for the security of web services. **CO4:** Assess vulnerabilities and attacks, defense mechanisms against network attacks. **CO5:** Apply the knowledge of Security in real time **CO6:** Analyze various tools to assess vulnerabilities
	17ISDE733	**SOFTWARE PROJECT MANAGEMENT**	**CO1:** Describe the conventional s/w management and explain how to improve s/w economics. **CO2:** Identify and discuss the key phases of project management and the key skills associated with each. **CO3:** Relate an appropriate project management approach through an evaluation of context and project scope and knowledge of agile and traditional and Global project management approaches, risk and quality management **CO4:** Apply the knowledge of the key project management skills, such as product and work break-down structure, schedule; governance, progress reporting and People Focused Process Models. **CO5:** Analyze various tools to assess in Projects **CO6:** Illustrate different techniques to manage software

	17ISDE741	**ADVANCED DATABASES**	**CO1:** Understand the overview of Object Database Concepts and their design **CO2:** Understand the system implementation techniques, data storage, representing data elements, database system architecture **CO3:** Understand the representation of data elements, database system architecture **CO4:** Explore the different Distributed Database Concepts and their architectures **CO5:** Apply NOSQL queries using Mongo DB **CO6:** Understand the concepts of Information Retrieval and to analyze the trends in Information Retrieval
	17ISDE742	**DISTRIBUTED OPERATING SYSTEMS**	**CO1:** Summarize the issues in DOS. **CO2:** Explain and give examples of theoretical foundations. **CO3:** Solve issues related to deadlocks and mutual exclusion **CO4:** Solve issues related to security in DOS **CO5:** Analyze the file systems of DOS. **CO6:**
8	**17ISOE811**	**MANAGEMENT INFORMATION SCIENCE**	**CO1:** Analyze the components, activities and strategies of Information system. **CO2:** Apply planning and maintenance strategies to the information systems **CO3:** Create the technologies like ERP, E-Business **CO4:** Understand E-Commerce, m-Commerce, wireless networks, mobile computing etc **CO5:** Identify the threats to information security **CO6:** Learn to protect information resources.
	17ISOE812	**BIG DATA ANALYTICS**	**CO1:** Broad understanding of big data application areas **CO2:** understand the big data approaches used **CO3:** Analyze non-retional databases,the techniques for storing and processing large volumes of structed and unstructed data,as well as streaming data **CO4:** motivate and explain trade-offs in big data processing technique design and anaysis **CO5:** Apply the concepts of Big Data using various applications **CO6:** Analyze the data with different algorithms