2018 Scheme

Sl. No	Branch	Sem	Subject	CO,S
1	ISE	3	Transform Calculus, Fourier Series and Numerical Techniques Mathematics (18MAT31)	1. Use the knowledge of Laplace and inverse Laplace transform in solving differential/integral equations arising in network analysis, control system and other fields of Engineering .
				2. Apply the concept of Fourier series, Fourier transform and their application in communication system and digital signal processing and Z-transform in the field of signals and systems
				3. Solve first order and 2nd order Differential equation by adopting Numerical methods
				4. Examine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis problems
2		3	Data Structures and Applications (18CS32)	1. Understand the fundamental data structures, its operations and implementation
				2. Discuss the various non-primitive data structures like stacks, queues, linked lists, trees and graphs and its operations
				3. Apply insertion, deletion, searching, sorting and merging techniques on different data structures
				4. Implement data structures in high level programming language

3		3	Analog And Digital Electronics (18CS33)	1. Design analog circuits using Transistor biasing circuits, timer IC, Active filter, Regulator IC and operational amplifier.
				2. Simplify digital circuits using Karnaugh Map , Quine-McClusky Methods and VEM technique.
				3. Explain characteristics of Gates and fundamentals of flip flops.
				4. Design Combinational logic circuits, registers and counters.
				5. Develop simple HDL programs.
4		3	Computer Organization (18CS34)	1. Describe the basic organization of computer system.
				2. Demonstrate functioning of different subsystems such as processor, Input/output, Memorysub systems.
				3. Design adder circuits to perform arithmetic operations.
				4. Illustrate the processing unit and pipelining concept of system.
5		3	Software Engineering (18CS35)	1. Describe software processes and core ethical issues of software development.
				2. Illustrate object orientation approach for software development.
				3. Describe software testing and software evolution.
				4. Discuss project planning and quality management.
6		3	Discrete Mathematical Structures (18CS36)	1. Verify correctness of an argument using Truth table, Laws of Logic and Rule of Inference.
				2. Solve problems on Mathematical Induction, Relations and Functions.
				3. Compute the problems using Counting Techniques, Principle of Inclusion Exclusion and Recurrence Relation.

				4. Apply Graph Theory and Tree concepts to solve the problems.
7		3	Analog And Digital Electronics Laboratory (18CSL37)	1. Design analog circuit Relaxation Oscillator, Astable multi vibrator and Window comparator.
				2. Verify Combinational Logic Circuits such as Multiplexer, adder, subtractor, binary to gray, gray to binary circuits.
				3. Implement asynchronous and synchronous counter
				4. Implement analog and digital circuits using simulation package
8		3	Data Structures Laboratory (18CSL38)	1. Analyze various linear and non-linear data structures.
				2. Implement & demonstrate different types of data structures, hashing algorithm
				3. Demonstrate the applications of various data structure on real world data.
9		4	Complex Analysis, Probability And Statistical Methods (18MAT41)	1. Remember the concept of probability to solve the problems on probability distribution and joint probability distribution.
				2.Understand the concept of correlation, regression and curve fitting.
				3. Demonstrate testing of hypothesis of sampling distribution.
				4. Apply the knowledge of complex differentiation and complex integration in diverse fields related to field theory and signal processing.
10		4	Additional Mathematics - 2 (18MATDIP41)	1. Solve rank of matrix by elementary row operations - Echelon form. Consistency of system of linear equations - Gauss elimination method
				2. Demonstrate various physical models through 2^{nd} and higher order linear differential equation and solve such equations.

				3. Construct a variety of Partial differential equation and solution by direct integration, method of separation of variables.
				4. Apply the knowledge of numerical methods, infinite series and series solution of ordinary differential equation to explain various physical and engineering problems.
11		4	Design And Analysis Of Algorithms (18CS42)	1. Discuss algorithm solving techniques
				2. Compute time and space complexity of algorithms
				3. Solve the problems using appropriate algorithm design techniques
				4. Analyze the efficiency of algorithm implementation for real world problems
12		4	Operating Systems (18CS43)	1. Understand the concepts of Operating Systems and types of Operating Systems.
				2. Apply various process scheduling algorithms for process management
				3. Analyze Deadlock Handling methods and management of memory structure.
				4. Realize the concepts of OS in different platform through Case Studies.
13		4	Microcontroller And Embedded Systems (18CS44)	1. Describe the architectural features and instructions of ARM processor.
				2. Develop assembly language programs using ARM instruction set.
				3. Understand the design concepts of embedded system.
				4. Discuss the concept of real time operating system.
14		4	Object Oriented Concepts (18CS45)	1. Understand object oriented features of C++ and JAVA
				2. Design solution using multi-threading and classes

				3. Design event driven applications using exceptions, swing and applets
				4. Develop programs using JAVA and C++
15		4	Data Communication (18CS46)	1. Understand the basic concepts of data communications, networking and topology of wired / wireless networks.
				2. Apply the knowledge of Physical layer, data link layer and network layer in communication protocol design
				3. Analyze packets flow in the network using open source tools
				4. Design the networking concepts and protocols using any programming language
16		4	Constitution of India, Professional Ethics and Cyber Law (18CPC49)	1. Know the fundamental political codes, structures, procedures, powers and duties of Indian Government institutions, fundamental rights, directive principles and the duties of citizens.
				2. Understand Engineering ethics with their responsibilities and individual roles in society.
				3. Know about the cybercrimes and cyber laws for cyber safety measures.
17		4	Design And Analysis Of Algorithm Laboratory (18CSL47)	1. Apply the object oriented concepts to implement java programs.
				2. Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming, etc.)
				3. Develop variety of algorithms such as sorting, graph related, combinatorial, etc., in a high level language.
				4. Analyze and compare the performance of algorithms using language features.
18		4	Microcontroller And Embedded Systems Laboratory (18CSL48)	1. Make use of ARM7 processor instruction set, write assembly language programs using ARM/LPC2148.

				2. Develop programs on an ARM7/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler by Interfacing a hardware devices to run stepper motor in clockwise or anti clockwise direction, to control a DC motor and to generate triangular & square wave using DAC interface.
				3. Design programs on an ARM7/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler to display message using internal UART , key code using keyboard on LCD and hex digit on 7-segment.
				4. Develop programs on an ARM7/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler to determine digital output for given analog input using internal ADC of ARM7 processor and using external interrupt toggle an LED on/off.
19		5	Management, Entrepreneurship For IT Industry (18CS51)	1. Understand the fundamentals of Management and Planning.
				2. Explain Staffing, Directing and Controlling in an organization.
				3. Discuss the Entrepreneurship stages and Roles of Small Scale Industries in Economic development.
				4. Describe Institutional support and content of project report.
20		5	Computer Networks And Security (18CS52)	1. Describe the principles of application layer and transport layer protocols
				2. Explain router architecture,IP and routing algorithms in network layer
				3. Solve the problems related to cryptographic algorithm

				4. llustrate the concepts of Multimedia Networking.
21		5	Database Management System (18CS53)	1. Describe the basic concepts of DBMS and RDBMS.
				2. Apply SQL and Advanced Queries for Databases.
				3. Identify Normalization methods for DB design.
				4. Developing a simple web/desktop applications for interacting with RDBMS tools like Oracle, MySQL.
22		5	Automata Theory And Computability (18CS54)	1. Understand the concepts of Automata theory and its applications
				2. Design FSMs, RE, PDA, Grammar and TM for given language
				3. Analyze the given Automata for its Acceptance of language and convert from one form to another
				4. Design an automata for a given real time scenario using Software tools
23		5	Application Development Using Python (18CS55)	1. Describe the proficiency in handling of loops and creation of functions.
				2. Develop the methods to create and manipulate lists, tuples and dictionaries
				3. Develop the commonly used operations involving regular expressions and file system.
				4. Apply the concepts of Object-Oriented Programming as used in Python.
				5. Apply API's for scraping websites, CSV and JSON file formats
24		5	Unix Programming (18CS56)	1. Describe features of UNIX operating system
				2. Discuss UNIX kernel support for files and processes
				3. Explain UNIX signals and IPC methods
				4. Illustrate UNIX commands and shell scripts

25		5	Computer Network Laboratory (18CSL57)	1. Analyze networking protocols by varying the parameters.
				2. Demonstrate the concepts of networking.
				3. Implement TCP/IP sockets, Datagram Sockets for client server applications.
26		5	DBMS Laboratory With Mini Project (18CSL58)	1. Design the Schema and ER - Diagram for the given Problem
				2. Create the Table using PL/SQL or SQL.
				3. Apply the SQL Query for data populated table.
				4. Prepare report and Application development using PL/SQL or SQL and Front end development tools
27		6	File Structures (18IS61)	1. Understand the concept of file structures for storage representation.
				2. Apply Indexing methodologies to increase the performance of accessing records.
				3. Analyze Co-sequential and Sorting methods for managing large files.
				4. Apply Hashing techniques for fast accessing of Records and files
28		6	Software Testing (18IS62)	1. Describe the fundamental concepts and Quality Planning activities involved in software artifacts.
				2. Identify test cases for the standard problems using Software Testing Techniques.
				3. Determine the test cases for software problems using functional testing approach.
				4. Prepare the test cases for software problems using structural testing approach.
29		6	Web Technology And Its Applications (18CS63)	1. Illustrate the concepts of HTML and CSS.
				2. Develop Client-Side scripts using JavaScript and Server-Side scripts using PHP.
				3. Describe the advanced concepts of PHP.
				4. Discuss concepts of frameworks Backbone MVC, JQuery and XML Processing.

				5. Develop web pages by using HTML, CSS, JavaScript and PHP.
30		6	Advanced Java and J2EE (18CS644)	1. Interpret the need for advanced Java concepts like Enumerations, Auto boxing and Annotations in developing modular and efficient programs.
				2. Interpret the need for advanced Java concepts like Collections and Framework in developing efficient programs
				3. Describe how to handling the string with string Constructors and special String Operations, String Buffer methods and String Builder.
				4. Describe how servlets fit into Java-based web application architecture.
				5. Illustrate database access and details for managing information using the JDBC API and JSP.
31		6	Introduction To Data Structures And Algorithms (18CS652)	1. Understand the basic concepts of C programming language
				2. Demonstrate the working of data structures like Stacks and queues
				3. Discuss the working of data structures like trees and graphs
				4. Apply the knowledge data structures to implement sorting and searching algorithms.
32		6	Information Management System (18IS645)	1. Understand information system networks, creating virtual, Agile company, to recognize IS
				2. Explain cross functional enterprise, transaction processing system, HRS, Accounting, Financial management system
				3. Describe CRM, ERP, and SCM. Benefits of CRM, ERP and SCM
				4. Analyse the scope of e-commerce, electronic payment process, categories and AI

33		6	Software Testing Laboratory (18ISL66)	1. Design and develop solution for solving Triangle, Nextdate and Commission problems using Boundary value testing.
				2. Design and develop solution for solving Triangle, Nextdate and Commission problems using Equivalence class testing.
				3. Design and develop solution for solving Triangle, and Commission problems using Decision table approach testing.
				4. Design and develop solution for solving Commission problem, Grading a Student, Searching and Sorting problems using Dataflow and path testing.
34		6	File Structures Laboratory With Mini-project (18ISL67)	1. Apply the concepts of Unix IPC to implement a given function.
				2. Demonstration of different methods of field and records organization.
				3. Demonstration of programs to manage operations of given file systems.
				4. Demonstration of Indexing Techniques
35		6	Mobile Application Development (18CSMP68)	1. Design Android applications by using various components available in Android studio environment.
				2. Develop Android applications by using various API's and Event Listeners.
				3. Demonstrate mechanism to pass data between different activities using Intents and Bundle.
				4. Demonstrate Android applications using multi-threading, parsing data and Internal/External storage.
				5. Implement Android applications using databases.
36		7	Artificial Intelligence And Machine Learning (18CS71)	1. Solve Artificial Intelligence problems using knowledge representation methods.

				2. Apply the Concept Learning for appropriate Machine Learning tasks.
				3. Illustrate different types of classifiers.
				4. Compare Instance Based and Reinforcement Learning.
37		7	Big Data Analytics (18CS72)	1. Understand concepts of big data analytics, Hadoop framework and HDFS.
				2. Demonstrate HDFS tools: MapReduce, Hive, Pig, Sqoop.
				3. Illustrate the concepts of NoSQL using MongoDB and Cassandra.
				4. Discuss Machine Learning algorithms for big data, web contents and Social Networks analytics with relevant visualization tools.
38		7	User Interface Design (18CS734)	1. Discuss user interface concepts and design process
				2. Discuss how to construct GUI by menu and navigation schemes
				3. Describe how to construct user interface by windows
				4. Discuss screen-based controls in user interface
39		7	Natural Language Processing (18CS743)	1. Describe the leading trends and systems in natural language processing.
				2. Understand the concept of language modelling, word level and Syntactic techniques.
				3. Discuss the NLP-text mining techniques.
				4. Determine the Information retrieval approaches in NLP.
40		7	Cryptography (18CS744)	1. Solve classical encryption techniques
				2. Explain Public key cryptography
				3. Discus Elliptic curve cryptography and Key management techniques
				4. Explain Authentication protocol
				5. Describe IP security

41		7	Python Application Programming (18CS752)	1. write programs using functions in python
				2. use strings and file operation in python programs
				3. create python programs to demonstrate the lists, dictionaries and regular expression
				4. implement object oriented concepts in python
				5. build web services, network and database programs in python
42		7	Introduction To Artificial Intelligence (18CS753)	1. Identify the problems where Artificial Intelligence is required and apply different Artificial Intelligencetechniques to solve the Artificial Intelligence problems.
				2.various knowledge representation methods and issues.
				3. Understanding reasoning with certainty and reasoning with uncertainty.
				4. Apply mini-max and various game playing techniques to real life problems.
				5.Understand various learning algorithms strategies used for game playing also study the process of designingexpert systems.
43		7	Artificial Intelligence And Machine Learning Laboratory (18CSL76)	1. Understand the implementation procedures for the Artificial Intelligence
				2. Apply appropriate data sets to the Machine Learning algorithms.
				3. Identify and apply Machine Learning algorithms to solve real-world problems.
44		7	Project Work Phase - 1 (18CSP77)	1. Consolidate the literature search to identify and formulate the engineering problem
				2. Identify the community that shall benefit through the solution to the identify design engineering problem and also demonstrate concern for the environment

				3. Arrive at an exhaustive list of available engineering tools that may be used for solving the identified engineering problem
				4. Engage in effective oral and written communication of the project work
				5. Ability to perform, contribute and lead the team
45		8	Internet Of Things (18CS81)	1. Describe the smart objects, architecture and data analytics for IoT.
				2. Design the IoT architecture for real world scenarios.
				3. Write programs for IoT applications.
				4. Analyze the boards available for IoT applications.
46		8	Storage Area Networks (18CS822)	1. Identify key challenges in managing information , analyze different storage networking technologies and virtualization
				2. Explain components and the implementation of NAS
				3. Describe CAS architecture and types of archives and forms of virtualization
				4. Illustrate the storage infrastructure and management activities
47		8	Nosql Database (18CS823)	1. Define, compare NOSQL and RDBMS and four types of NoSQL Databases
				2. Explain distributed model and the CAP Theorem
				3. Explain the architecture, define objects, load data, query data and performance tune on NoSQL databases
				4. Explain Graph database
48		8	Internship (18CSI85)	1. Understand Engineering Processes relevant to the Industry.
				2. Apply theory and principles of computer science and engineering to solve an engineering problem.

				3. Analyze the usage of modern technologies, tools and processes to solve the live problems.
				4. Communicate effectively and work in teams. (Oral and Written communication, Report writing, Presentation skills)
				5. Imbibe the practice of professional ethics.
49		8	Project Work Phase - 2 (18CSP83)	1. Select the engineering tools/components for solving the identified engineering problem.
				2. Apply the identified concepts and engineering tools to arrive at design solution(s) forthe identified engineering problem
				3. Implement the design solution(s) using identified tools
				4. Analyze and interpret results of experiments conducted on the designed solution(s) toarrive at valid conclusion
				5. Engage in effective oral and written communication through presentation of the project work
				6. Perform in the team, contribute to the team and mentor/lead the team and follow professional ethics
50		8	Technical Seminar (18CSS84)	1. Identify and Understand the Recent Advancements in the Cutting edge Software technologies.
				2. Prepare the Effective presentations on the chosen topic of interest.
				3. Deliver the presentation effectively in front of the Audience
				4. Prepare the Technical Document on the Topic Chosen.

2021 Scheme

Sl.No	Branch	Sem	Subject	CO,S
1	ISE	3	Transform Calculus, Fourier Series and Numerical Techniques (21MAT31)	1. To have an insight into solving ODE using Laplace transform techniques
				2. Learn to use the Fourier series to represent periodical physical phenomena in engineering analysis
				3. To enable the students to study Fourier transforms and concepts of infinite Fourier sine and Cosine transform and to learn the method of solving difference equations by the z-transform method
				4. To develop the proficiency in solving ordinary and partial differential equation arising in engineering applications, using numerical methods.
2		3	Data Structures and Applications (21CS32)	1. Understand the fundamental data structures and its operations.
				2. Discuss the various non-primitive data structures - stacks, queues, linked lists, trees, graphs and its operations.
				3. Apply insertion, deletion, searching, sorting and merging techniques on real world data.
				4. Implement data structures using high level programming language.
3		3	Analog and Digital Electronics (21CS33)	1. Design analog circuits using Transistor biasing circuits, Active filter,Regulator IC and operational amplifier.
				2. Simplify digital circuits using Karnaugh Map, Quine-McClusky Methods and VEM technique.

				3. Explain characteristics of Gates and fundamentals of flip flops.
				4. Design Combinational logic circuits, registers and counters.
				5. Develop simple HDL programs.
4		3	Computer Organization and Architecture (21CS34)	1. Describe the basic organization of computer system.
				2. Demonstrate functioning of different subsystems such as processor, Input/output, Memory sub systems.
				3. Design adder circuits to perform arithmetic operations.
				4. Illustrate the processing unit and pipelining concept of system.
5		3	Object Oriented Programming with JAVA Laboratory (21CSL35)	1. Make use of java fundamentals and programming constructs.
				2. Apply the concepts of encapsulation, Inheritance and polymorphism.
				3. Utilize the Eclipse IDE for packages, exception handling and multi-threaded applications.
				4. Develop the java applications using Swings, Applets, Collections and File operations.
6		3	Social Connect and Responsibility (21SCR36)	1. Understand social responsibility
				2. Practice sustainability and creativity
				3. Showcase planning and organizational skills
7		3	Mastering Office (21CSL381)	1. Understand the Microsoft office fundamentals and perform adequate documentation.
				2. Use the advanced functions and productivity tools to assist in developing worksheets.

				3. Create and deliver appealing multimedia presentations that convey the key points of your message through the use of text, graphics, and animations.
				4. Create and modify simple Tables, Forms, scheduling applications and Reports using Microsoft Access and outlook.
8		4	Mathematical Foundations for Computing (21MATCS41)	1. Apply the concepts of logic for effective computation and relating problems in the Engineering domain
				2. Analyze the concepts of functions and relations to various fields of Engineering. Comprehend the concepts of Graph theory for various applications of computational
				3. Make use of the correlation and regression analysis to fit a suitable mathematical model for statistical data
				4. Apply discrete and continuous probability distributions in analyzing the probability models arising in engg field
				5. Construct joint probability distributions and demonstrate the validity of testing the hypothesis
9		4	Additional Mathematics I (21MATDIP41)	1. Test for consistency and solve the system of LE
				2. Solve Higher order DE
				3. Apply elementary probability theory and solve related problems
				4. To interpolate/ extrapolate from the given data
				5. Apply the knowledge of NM on modelling and solving engg. problems
10		4	Design and Analysis of Algorithms (21CS42)	1. Discuss the algorithmic efficiency using asymptotic notations

				2. Design algorithms using various algorithmic design techniques
				3. Apply appropriate algorithm design techniques to solve the given problem
				4. Solve the real world problems using appropriate algorithmic design techniques
11		4	Microcontroller and Embedded Systems (21CS43)	1. Interpret the architectural features, instructions, C-Compilers and optimization of ARM processor.
				2. Develop assembly language programs using ARM instruction set.
				3. Understand the embedded system components and design concepts.
				4. Demonstrate the applications of real time operating system for embedded systems.
12		4	Operating Systems (21CS44)	1. Understand the concepts of Operating Systems and types of Operating Systems.
				2. Apply various process scheduling algorithms for process management
				3. Analyze Deadlock Handling methods and management of memory structure
				4. Realize the concepts of OS in different platform through Case Studies.
13		4	Universal Human Values (21UH49)	1. Explore holistic vision of life in themselves and their surroundings.
				2. Develop competence and capabilities for maintaining Health and Hygiene.
				3. Analyze various problems in life, family, Society and in handling problems with Sustainable Solutions.
				4. Apply values to their own self in different day-to-day settings in real life and in handling problems with sustainable solutions.

				5. Adopt the value of appreciation and aspiration for excellence and gratitude for all.
14		4	Constitution of India and Professional Ethics (21CIP47)	1. Understand the history and basic structure of Indian Constitution
				2. Know the Fundamental Rights, Fundamental Duties and Directive Principles of State Policies of our constitution
				3. Know about the Union executive and Judicial System
				4. Understand the State Executive & Elections system, Amendments and Emergency provisions
				5. Know about the professional ethics and Intellectual Property rights
15		4	Python Programming Laboratory (21CSL46)	1. Demonstrate proficiency in data types, handling of loops, creation of functions and regular expression using python programming.
				2. Identify the methods to create and manipulate strings, lists, tuples and dictionaries.
				3. Implement the Object-Oriented Programming concepts in Python.
				4. Determine the need for file system and working with various file formats and scraping websites.
16		4	Web Programming (21CSL481)	1. Design web page using basic HTML/XHTML tags
				2. Create tables and forms in HTML/XHTML documents.
				3. Build web page using Cascading Style Sheets.

				4. Develop web programs using javascripts.