

COURSE OUTCOMES - 2018 SCHEME

3rd SEMESTER

Subject:	Transform Calculus, Fourier Series And Numerical Techniques		
Subject Code:	18MAT31	NBA Code:	C201
CO1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.		
CO2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.		
CO3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.		
CO4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.		
CO5	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.		

Subject:	Data Structures And Applications		
Subject Code:	18CS32	NBA Code:	C202
CO1	Use different types of data structures, operations and algorithms		
CO2	Apply searching and sorting operations on files		
CO3	Use stack, Queue, Lists, Trees and Graphs in problem solving		
CO4	Implement all data structures in a high-level language for problem solving.		

Subject:	ANALOG AND DIGITAL ELECTRONICS		
Subject Code:	18CS33	NBA Code:	C203
CO1	Design and analyze application of analog circuits using photo devices, timer IC, power supply and regulator IC and op-amp.		
CO2	Explain the basic principles of A/D and D/A conversion circuits and develop the same.		
CO3	Simplify digital circuits using Karnaugh Map , and Quine-McClusky Methods		
CO4	Explain Gates and flip flops and make us in designing different data processing circuits, registers and counters and compare the types.		
CO5	Develop simple HDL programs		

Subject:	COMPUTER ORGANIZATION		
Subject Code:	18CS34	NBA Code:	C204
CO1	Explain the basic organization of a computer system.		
CO2	Demonstrate functioning of different sub systems, such as processor, Input/output, and memory.		
CO3	Illustrate hardwired control and micro programmed control, pipelining, embedded and other computing systems.		
CO4	Design and analyse simple arithmetic and logical units.		

Subject:	SOFTWARE ENGINEERING		
Subject Code:	18CS35	NBA Code:	C205
CO1	Design a software system, component, or process to meet desired needs within realistic constraints.		
CO2	Assess professional and ethical responsibility		
CO3	Function on multi-disciplinary teams		
CO4	Use the techniques, skills, and modern engineering tools necessary for engineering practice		
CO5	Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems		

Subject:	DISCRETE MATHEMATICAL STRUCTURES		
Subject Code:	18CS36	NBA Code:	C206
CO1	Use propositional and predicate logic in knowledge representation and truth verification.		
CO2	Demonstrate the application of discrete structures in different fields of computer science.		
CO3	Solve problems using recurrence relations and generating functions.		
CO4	Application of different mathematical proofs techniques in proving theorems in the courses.		
CO5	Compare graphs, trees and their applications.		

Subject:	ANALOG AND DIGITAL ELECTRONICS LABORATORY		
Subject Code:	18CSL37	NBA Code:	C207
CO1	Use appropriate design equations / methods to design the given circuit.		
CO2	Examine and verify the design of both analog and digital circuits using simulators.		
CO3	Make us of electronic components, ICs, instruments and tools for design and testing of circuits for the given the appropriate inputs.		
CO4	Compile a laboratory journal which includes; aim, tool/instruments/software/components used, design equations used and designs, schematics, program listing, procedure followed, relevant theory, results as graphs and tables, interpreting and concluding the findings.		

Subject:	DATA STRUCTURES LABORATORY		
Subject Code:	18CSL38	NBA Code:	C208
CO1	Analyze and Compare various linear and non-linear data structures		
CO2	Code, debug and demonstrate the working nature of different types of data structures and their applications		
CO3	Implement, analyze and evaluate the searching and sorting algorithms		
CO4	Choose the appropriate data structure for solving real world problems		

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4th SEMESTER

Subject:	Complex Analysis, Probability And Statistical Methods		
Subject Code:	18MAT41	NBA Code:	C209
CO1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.		
CO2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.		
CO3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.		
CO4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.		
CO5	Construct joint probability distributions and demonstrate the validity of testing		

Subject:	Design And Analysis Of Algorithms		
Subject Code:	18CS42	NBA Code:	C210
CO1	Describe computational solution to well-known problems like searching, sorting etc.		
CO2	Estimate the computational complexity of different algorithms.		
CO3	Devise an algorithm using appropriate design strategies for problem solving.		

Subject:	Operating Systems		
Subject Code:	18CS43	NBA Code:	C211
CO1	Demonstrate need for OS and different types of OS		
CO2	Apply suitable techniques for management of different resources		
CO3	Use processor, memory, storage and file system commands		
CO4	Realize the different concepts of OS in platform of usage through case studies		

Subject:	Microcontroller And Embedded Systems		
Subject Code:	18CS44	NBA Code:	C212
CO1	Describe the architectural features and instructions of ARM microcontroller.		
CO2	Apply the knowledge gained for Programming ARM for different applications.		
CO3	Interface external devices and I/O with ARM microcontroller.		
CO4	Interpret the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.		
CO5	Develop the hardware /software co-design and firmware design approaches.		
CO6	Demonstrate the need of real time operating system for embedded system applications.		

Subject:	Object Oriented Concepts		
Subject Code:	18CS45	NBA Code:	C213
CO1	Explain the object-oriented concepts and JAVA.		
CO2	Develop computer programs to solve real world problems in Java.		
CO3	Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using swings.		

Subject:	Data Communication		
Subject Code:	18CS46	NBA Code:	C214
CO1	Explain the various components of data communication.		
CO2	Explain the fundamentals of digital communication and switching.		
CO3	Compare and contrast data link layer protocols.		
CO4	Summarize IEEE 802.xx standards		

Subject:	Design And Analysis Of Algorithms Laboratory		
Subject Code:	18CSL47	NBA Code:	C215
CO1	Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming, etc.)		
CO2	Implement a variety of algorithms such as sorting, graph related, combinatorial, etc., in a high level language.		
CO3	Analyze and compare the performance of algorithms using language features.		
CO4	Apply and implement learned algorithm design techniques and data structures to solve real-world problems.		

Subject:	Microcontroller And Embedded Systems Laboratory		
Subject Code:	18CSL48	NBA Code:	C216
CO1	Develop and test program using ARM7TDMI/LPC2148		
CO2	Conduct the following experiments on an ARM7TDMI/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler.		

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5th SEMESTER

Subject:	Management And Entrepreneurship For It Industry		
Subject Code:	18CS51	NBA Code:	C301
CO1	Define management, organization, entrepreneur, planning, staffing, ERP and outline their importance in entrepreneurship		
CO2	Utilize the resources available effectively through ERP		
CO3	Make use of IPRs and institutional support in entrepreneurship		

Subject:	Computer Networks And Security		
Subject Code:	18CS52	NBA Code:	C302
CO1	Explain principles of application layer protocols		
CO2	Recognize transport layer services and infer UDP and TCP protocols		
CO3	Classify routers, IP and Routing Algorithms in network layer		
CO4	Understand the Wireless and Mobile Networks covering IEEE 802.11 Standard		
CO5	Describe Multimedia Networking and Network Management		

Subject:	Database Management System		
Subject Code:	18CS53	NBA Code:	C303
CO1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS.		
CO2	Use Structured Query Language (SQL) for database manipulation.		
CO3	Design and build simple database systems		
CO4	Develop application to interact with databases.		

Subject:	Automata Theory And Computability		
Subject Code:	18CS54	NBA Code:	C304
CO1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation		
CO2	Learn how to translate between different models of Computation (e.g., Deterministic and Non-deterministic and Software models).		
CO3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.		
CO4	Develop skills in formal reasoning and reduction of a problem to a formal model, with an emphasis on semantic precision and conciseness.		
CO5	Classify a problem with respect to different models of Computation.		

Subject:	Application Development Using Python		
Subject Code:	18CS55	NBA Code:	C305
CO1	Demonstrate proficiency in handling of loops and creation of functions.		
CO2	Identify the methods to create and manipulate lists, tuples and dictionaries.		
CO3	Discover the commonly used operations involving regular expressions and file system.		
CO4	Interpret the concepts of Object-Oriented Programming as used in Python.		
CO5	Determine the need for scraping websites and working with CSV, JSON and other file formats.		

Subject:	Unix Programming		
Subject Code:	18CS56	NBA Code:	C306
CO1	Explain Unix Architecture, File system and use of Basic Commands		
CO2	Illustrate Shell Programming and to write Shell Scripts		
CO3	Categorize, compare and make use of Unix System Calls		
CO4	Build an application/service over a Unix system.		

Subject:	Computer Network Laboratory		
Subject Code:	18CSL57	NBA Code:	C307
CO1	Analyze and Compare various networking protocols.		
CO2	Demonstrate the working of different concepts of networking.		
CO3	Implement, analyze and evaluate networking protocols in NS2 / NS3 and JAVA programming language		

Subject:	DBMS Laboratory With Mini Project		
Subject Code:	18CSL58	NBA Code:	C308
CO1	Create, Update and query on the database.		
CO2	Demonstrate the working of different concepts of DBMS		
CO3	Implement, analyze and evaluate the project developed for an application.		

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6th SEMESTER

Subject:	System Software And Compilers		
Subject Code:	18CS61	NBA Code:	C309
CO1	Understand the system softwares such as assemblers and loaders.		
CO2	Understand Language processor & Science of compiler.		
CO3	Analyze top down and bottom up parsers.		
CO4	Apply the usage of lex and yacc tools.		
CO5	Knowledge of SDD, SDT, intermediate code generation and machine code generation.		

Subject:	Computer Graphics And Visualization		
Subject Code:	18CS62	NBA Code:	C310
CO1	Design and implement algorithms for 2D graphics primitives and attributes.		
CO2	Illustrate Geometric transformations on both 2D and 3D objects.		
CO3	Apply concepts of clipping and visible surface detection in 2D and 3D		
CO4	Apply concepts of 2D and 3D viewing and illumination models.		
CO5	Decide suitable hardware and software for developing graphics packages using OPENGL.		

Subject:	Web Technology And Its Applications		
Subject Code:	18CS63	NBA Code:	C311
CO1	Adapt HTML and CSS syntax and semantics to build web pages.		
CO2	Construct and visually format tables and forms using HTML and CSS		
CO3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.		
CO4	Appraise the principles of object oriented development using PHP		
CO5	Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features.		

Subject:	Object Oriented Modeling And Design		
Subject Code:	18CS642	NBA Code:	C312
CO1	Describe the concepts of object-oriented and basic class modelling.		
CO2	Draw class diagrams, sequence diagrams and interaction diagrams to solve problems.		
CO3	Choose and apply a befitting design pattern for the given problem.		

Subject:	Occupational Health And Safety		
Subject Code:	18CV653	NBA Code:	C313
CO1	Identify hazards in the workplace that pose a danger or threat to their safety or health, or that of others.		
CO2	Control unsafe or unhealthy hazards and propose methods to eliminate the hazard.		
CO3	Present a coherent analysis of a potential safety or health hazard both verbally and in writing, citing the occupational Health and Safety Regulations as well as supported legislation.		
CO4	Discuss the role of health and safety in the workplace pertaining to the responsibilities of workers, managers, supervisors.		
CO5	Identify the decisions required to maintain protection of the environment, workplace as well as personal health and safety.		

Subject:	System Software Laboratory		
Subject Code:	18CSL66	NBA Code:	C314
CO1	Implement and demonstrate Lexers and Parsers.		
CO2	Evaluate different algorithms required for management, scheduling, allocation and communication used in operating system.		
CO3	List out the requirements for the given problem.		
CO4	Design and implement the solution for given problem in any programming language (C, C++, Java).		
CO5	Derive test cases for any given problem.		
CO6	Apply the appropriate technique for the design of flow graph.		
CO7	Create appropriate document for the software artifact.		

Subject:	Computer Graphics Laboratory With Mini Project		
Subject Code:	18CSL67	NBA Code:	C315
CO1	Apply the concepts of computer graphics		
CO2	Implement computer graphics applications using OpenGL		
CO3	Animate real world problems using OpenGL		

Subject:	Mobile Application Development Lab		
Subject Code:	18CSMP68	NBA Code:	C316
CO1	Create, test and debug Android application by setting up Android development environment		
CO2	Implement adaptive, responsive user interfaces that work across a wide range of devices		
CO3	Infer long running tasks and background work in Android applications.		
CO4	Demonstrate methods in storing, sharing and retrieving data in Android applications		
CO5	Infer the role of permissions and security for Android applications		

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7th SEMESTER

Subject:	Artificial Intelligence And Machine Learning		
Subject Code:	18CS71	NBA Code:	C401
CO1	Appraise the theory of Artificial intelligence and Machine Learning.		
CO2	Illustrate the working of AI and ML Algorithms.		
CO3	Demonstrate the applications of AI and ML.		

Subject:	Big Data And Analytics		
Subject Code:	18CS72	NBA Code:	C402
CO1	Understand fundamentals of Big Data analytics.		
CO2	Investigate Hadoop framework and Hadoop Distributed File system.		
CO3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data.		
CO4	Demonstrate the MapReduce programming model to process the big data along with Hadoop tools.		
CO5	Use Machine Learning algorithms for real world big data.		
CO6	Analyze web contents and Social Networks to provide analytics with relevant visualization tools.		

Subject:	Advanced Computer Architectures		
Subject Code:	18CS733	NBA Code:	C403
CO1	Explain the concepts of parallel computing and hardware technologies		
CO2	Compare and contrast the parallel architectures		
CO3	Illustrate parallel programming concepts		

Subject:	User Interface Design		
Subject Code:	18CS734	NBA Code:	C403
CO1	Understand the importance of user interface and benefits of good design.		
CO2	Understand the user interface design process and business function.		
CO3	Understand the types of system menus and navigation schemes.		
CO4	Understand the characteristics of windows and device based controls.		
CO5	Understand the screen based controls and kinds of tests.		

Subject:	Digital Image Processing		
Subject Code:	18CS741	NBA Code:	C404
CO1	Explain fundamentals of image processing		
CO2	Compare transformation algorithms		
CO3	Contrast enhancement, segmentation and compression techniques		

Subject:	Robotic Process Automation Design And Development		
Subject Code:	18CS745	NBA Code:	C404
CO1	To Understand the basic concepts of RPA		
CO2	To Describe various components and platforms of RPA		
CO3	To Describe the different types of variables, control flow and data manipulation techniques		
CO4	To Understand various control techniques and OCR in RPA		
CO5	To Describe various types and strategies to handle exceptions		

Subject:	Energy and Environment		
Subject Code:	18ME751	NBA Code:	C405
CO1	Understand energy scenario, energy sources and their utilization.		
CO2	Understand various methods of energy storage, energy management and economic analysis.		
CO3	Analyse the awareness about environment and eco system.		
CO4	Understand the environment pollution along with social issues and acts.		
CO5	Understand the Social issues of Environment		

Subject:	Artificial Intelligence And Machine Learning Laboratory		
Subject Code:	18CSL76	NBA Code:	C406
CO1	Implement and demonstrate AI and ML algorithms.		
CO2	Evaluate different algorithms.		

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8th SEMESTER

Subject:	Internet Of Things		
Subject Code:	18CS81	NBA Code:	C408
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 IT 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.		

Subject:	Storage Area Networks		
Subject Code:	18CS822	NBA Code:	C409
CO1	Identify key challenges in managing information and analyze different storage networking technologies and virtualization		
CO2	Explain components and the implementation of NAS		
CO3	Describe CAS architecture and types of archives and forms of virtualization		
CO4	Illustrate the storage infrastructure and management activities		