SAHYADRI
COLLEGE OF ENGINEERING & MANAGEMENT
MANGALURU

## AY 2019-20: ODD SEMESTER

| Sem | Course Code | NBA Code | COs Code | COURSE OUTCOMES |
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| III Semester | 18MAT31 | C201 | C201.1 | Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering. |
| | | | C201.2 | Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory. |
| | | | C201.3 | Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems. |
| | | | C201.4 | Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems. |
| | | | C201.5 | Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis. |
| | 18CS32 | C202 | C202.1 | Understand the concept of Dynamic memory management and various array operations. |
| | | | C202.2 | Demonstrate application of appropriate data structures for solving computing problems. |
| | | | C202.3 | Interpret and demonstrate the appropriate usage of Memory using linked list. |
| | | | C202.4 | Solve problem involving graphs, trees and heaps. |
| | | | C202.5 | Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data and File operations. |
| | 18CS33 | C203 | C203.1 | Explain the working principles and its applications of OPAMP, BJT, Astable Multivibrators, regulator IC and A/D & D/A conversion circuits |
| | | | C203.2 | Apply K-Map, QM method and MEV techniques to simplify digital circuits. |
| | | | C203.3 | Explain the gates and its use in designing various data processing circuits. |
| | | | C203.4 | Describe flip flops and VHDL Programming. Develop simple VHDL programs |
| | | | C203.5 | Explain the Flip-flops and its use in designing various sequential circuits like registers and counters. |
| | 18CS34 | C204 | C204.1 | Explain the basics of computer organization, structure and operation of computers, performance, machine instructions, number representation, addressing techniques, generic assembly language features, simple input/output programming |
| | | | C204.2 | Discuss different ways of communicating with I/O devices and standard I/O interfaces, Interrupts, DMA methods, bus protocols and standards with PCI, SCSI, and USB standards. |
| | | | C204.3 | Describe the components and organization used to implement the memory, cache memory. |
| | | | C204.4 | Apply the arithmetic and logical operations with integer operands. |
| | | | C204.5 | Explain the basic processing and organization of simple processor, multiple processor systems and the techniques employed to achieve parallelism. |
| III Semester | 18CS35 | C205 | C205.1 | Explain the process of building software, discuss professional and ethical responsibility and describe the concept of Requirements Collection and Requirement Engineering Process. |
| | | | C205.2 | Explain the fundamentals of Object Oriented concepts and discuss the class modelling concepts. |
| | | | C205.3 | Demonstarte various models used for designing software systems and illustrate various design and implementation issues |
| | | | C205.4 | Explain software testing and interpret various types of testing. Describe Software Evolution process. |
| | | | C205.5 | Apply and examine the project planning techniques used in software development. Illustarte the software qulaity management. |
| | 18CS36 | C206 | C206.1 | Demonstrating the correctness of an argument using mathematical logic and construct the proofs for quantifiers. |
| | | | C206.2 | Using the concepts of mathematical induction to construct the proofs and solving the counting problems. |
| | | | C206.3 | Solve the problems consisting of Cartesian products, computer recognition and partial orders allied to relations and functions. |
| | | | C206.4 | Solve the problems using principle of inclusion-exclusion with its applications and recurrence relations |
| | | | C206.5 | Apply the different concepts of graphs and trees in the field of computer science. |
| | 18CSl37 | C207 | C207.1 | Demonstrate Analog Electronic Circuits based on Op-Amps and 555 Timers. |
| | | | C207.2 | Demonstrate the implementation of combinational logic circuits using digital logic design. |
| | | | C207.3 | Demonstrate the implementation of sequential logic circuits using digital logic design. |
| | | | C207.4 | Show the simulation of Analog Circuits using circuit simulation software. |
| | | | C207.5 | Show the simulation of Digtal Circuits using Hardware Description Language. |

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| | 18CSI38 | C208 | C208.1 | Demonstrate array and string data structures by designing and implementing the relevant function required |
| | | | C208.2 | Demonstrate stack and queue data structures by designing and developing the required functions with its applications |
| | | | C208.3 | Demonstrate the concepts of SLL,DLL and SCLL by designing and developing the required functions with its applications |
| | | | C208.4 | Demonstrate trees and graphs by designing and implementing the relevant function required |
| | | | C208.5 | Illustrate the application of file data structures by designing suitable hash techniques also analyze the collision problems and develop suitable functions to resolve collision problem |
| V Semester | 17CS51 | C301 | C301.1 | Describe Management, Organization, Planning and outline their importance in the society. |
| | | | C301.2 | Define Staffing and identify the traits of leadership indicating the importance of Coordination, Communication, Directing and Controlling. |
| | | | C301.3 | Explain Entrepreneurship, its status in India by identifying various traits of becoming an Entrepreneur. (CL2) |
| | | | C301.4 | Identify and Discuss the steps involved in undertaking a project, importance of maintaining reports. Explain Enterprise Resource Planning and its use. (CL2) |
| | | | C301.5 | Define and identify the Government policies, Institutional supports available for Small and Micro Industries through various case studies. Explain the concept of IPR. (CL2) |
| | 17CS52 | C302 | C302.1 | Explain principles of application layer protocols |
| | | | C302.2 | Recognize transport layer services and infer UDP and TCP protocols |
| | | | C302.3 | Classify routers, IP and Routing Algorithms in network layer |
| | | | C302.4 | Understand the Wireless and Mobile Networks covering IEEE 802.11 Standard |
| | | | C302.5 | Describe Multimedia Networking and Network Management |
| | 17CS53 | C303 | C303.1 | Discuss the introduction into databases, overview of database languages and architecutures. Identify,analyze and define database objects,enforce integrity constraints on a database using RDBMS |
| | | | C303.2 | Apply Structured Query Language (SQL) for database creation and manipulation. |
| | | | C303.3 | Examine the usage of relational algebra in database applications. |
| | | | C303.4 | Apply normalization to the database design theory and analyse the normalisation algorithms. |
| | | | C303.5 | Design database applications and demonstarte the concepts of transaction processing, concurrency control and recovery in databases. |
| | 17CS54 | C304 | C304.1 | Design finite state machines for different formal languages by discussing the central concepts of Automata Theory. |
| | | | C304.2 | Write and simplify the regular expressions and disscuss the proofs of regular languages. |
| | | | C304.3 | Write and simplify the context free grammars and design pushdown automata for the different formal languages. |
| | | | C304.4 | Discuss the pumping theorem and closure properties of context free languages and design turing machine for the different formal languages. |
| | | | C304.5 | Discuss the variants of turing machine and concepts of decidability and complexity related to computational problems. |
| V Semester | 17CS553 | C307 | C307.1 | Interpret the need for advanced Java concepts like enumerations and annotations for developing efficient programs. |
| | | | C307.2 | Demonstrate the Collection Framework for modular programs using Java Collection Framework class. |
| | | | C307.3 | Make use of different String handling functions for developing programs |
| | | | C307.4 | Demonstarte how Servlets fit into java-based web application architecture. |
| | | | C307.5 | Illustarte database connection using JDBC API. |
| | 17CS564 | C312 | C312.1 | Discuss the sample applications on Visual Studio .NET platform by understanding the syntax and semantics of C# |
| | | | C312.2 | Demonstrate Object Oriented Programming concepts in C# programming language. |
| | | | C312.3 | Illustrate the applications by using interfaces and explore the available built-in interfaces. |
| | | | C312.4 | Analyze the concept of indexers, generics and collections by designing an application. |
| | | | C312.5 | Apply queries to query in-memory data and identify operator behavior using operator overloading. |
| | 17CSL57 | C314 | C314.1 | Analyze the networking scenarios with respect to implementation issues |
| | | | C314.2 | Demonstrate the working of networking concepts. |
| | | | C314.3 | Explain the fuctionalities of Protocols-layers |
| | | | C314.4 | Ilustate the Connection oriented networks using suitable tools |
| | | | C314.5 | Ilustrate the working of Wireless networks |

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| | 17CSL58 | C315 | C315.1 | Use SQL programming and different concepts of DBMS to create, update and query on the Library and College databases. |
| | | | C315.2 | Demonstarte SQL programming and different concepts of DBMS to create, update and query on the Order database. |
| | | | C315.3 | Illustrate the concepts of SQL programming and DBMS to create, update and query on the Movie database. |
| | | | C315.4 | Create, update and query on the Company database by using different concepts of DBMS and SQL programming. |
| | | | C315.5 | Design, implement and demonstrate a mini project using front end tools and database and Compile the working with well document using modern tool. |
| VII Semester | 15CS71 | C401 | C401.1 | Discuss the syntax and semantic structures of HTML and CSS to build web pages |
| | | | C401.2 | Demonstrate the tables and forms using HTML and CSS |
| | | | C401.3 | Use JavaScript code to create client side scripting ,PHP to generate server side scripting and display the contents dynamically |
| | | | C401.4 | Apply object oriented programming concepts and exceptional handling using PHP |
| | | | C401.5 | Analyse JavaScript frameworks like AJAX, jQuery, Backbone MVC to create dynamic ,interactive websites |
| | 15CS72 | C402 | C402.1 | Identify and describe a design pattern, Classify design pattern catalogue, explain various object oriented design concepts. |
| | | | C402.2 | Summerize the requirements,Illustrate conceptual classesand relationships among the classes. |
| | | | C402.3 | Explain various architectural styles with various case studies. |
| | | | C402.4 | Explain the concepts of Interactive systems and summerize MVC architecture. |
| | | | C402.5 | Identify the design process related to Distributed Objects and identify its roles in building an object oriented system. |
| | 15CS73 | C403 | C403.1 | Explain concept learning and hypothesis searching using Find-S & Candidate Elimination Algorithms |
| | | | C403.2 | Identify the characteristics of Decision Tree and solve problems associated with it . |
| | | | C403.3 | Apply Artificial Neural Networks, Perceptron and Backpropagation Algorithms for appropriate applications. . |
| | | | C403.4 | Apply Bayesian techniques and derive effectively learning rules. |
| | | | C403.5 | Examine Hypothesis and Instance Based Learning and Reinforcement Learning Concepts |
| | 15CS743 | C406 | C406.1 | Illustrate the Cryptanalysis using various Ciphers |
| | | | C406.2 | Apply the Hash techniques in Digital platforms to enhance security |
| | | | C406.3 | Analyze the vulnerabilities in the existing system using Crytographic protocols |
| | | | C406.4 | Explain the need of Key management |
| | | | C406.5 | Outline the need for security in various Digital world applications |
| | 15CS753 | C410 | C410.1 | Discuss the importance and the roles of Information Systems in the business processes and also understand the basic competitive strategies. |
| | | | C410.2 | Determine various cross functional enterprise systems and how they can provide significant business value to a company. |
| | | | C410.3 | Summarizing the benefits and challenges of CRM, ERP and SCM. |
| | | | C410.4 | Examine the needs of essential processes, categories and business values of e-commerce applications |
| | | | C410.5 | Explain the business process evolutions and the use of decision support systems to tackle the changes |
| | 15CSL76 | C412 | C412.1 | Demonstrate the Find-S Algorithm and the Candidate Elimination Algorithm for finding the Hypothesis Space. |
| | | | C412.2 | Demonstrate the implementation of Decision Tree Algorithm and use it to perform classification of a new data sample. |
| | | | C412.3 | Demonstrate the implementation, training and testing of an Artificial Neural Network using Backpropagation Algorithm. |
| | | | C412.4 | Demonstrate the use of Python ML libraries to implement Naïve Bayes Classifier, Bayesian Belief Networks, EM Algorithm,k-Means Clustering Algorithm and K-Nearest Neighbors Algorithm . |
| | | | C412.5 | Demonstrate the implementation of Locally Weighted Regression Algorithm to fit data points. |
| | 15CSL77 | C413 | C413.1 | Analyze the designing of the web pages using html,CSS and Javascript. |
| | | | C413.2 | Demonstrate an XML document designed to store the information in a webpage and use CSS to display the document |
| | | | C413.3 | Examine a PHP program to analyze the server side scripting technologies |
| | | | C413.4 | Create a php program to analyze the working of databases with web technologies |
| | | | C413.5 | Build web application projects using the languages and concepts using web technologies and frameworks and databases. |

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## AY 2019-20: EVEN SEMESTER

| Sem | Course Code | NBA Code | COs Code | COURSE OUTCOMES |
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| IV Semester | 18MAT41 | C212 | C201.1 | Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory. |
| | | | C201.2 | Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing. |
| | | | C201.3 | Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field. |
| | | | C201.4 | Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data. |
| | | | C201.5 | Construct joint probability distributions and demonstrate the validity of testing the hypothesis |
| | 18CS42 | C213 | C213.1 | Illustrate the correctness of algorithms using inductive proofs and invariants. Analyze worst-case, best case and average case running times of algorithms using asymptotic analysis for non-recursive and recursive algorithms and also explain the different data structures used for different data types. |
| | | | C213.2 | To dissect and solve recurrences describing the performance of divide-and-conquer using algorithms. Also demonstrate the decrease and conquer paradigm using topological sort. |
| | | | C213.3 | Illustrate the greedy technique and explain when an algorithmic design situation calls for it. Synthesize greedy technique, and analyze those using different algorithms. Also dissect the transform and conquer approach. |
| | | | C213.4 | Synthesize dynamic-programming algorithms, and analyze those using different examples. |
| | | | C213.5 | Ability to apply algorithm design principles to derive solutions for real life problems, NP class problems and comment on complexity of solution. |
| | 18CS43 | C214 | C214.1 | Discuss various Components of an Operating System and understand the management of process, memory and storage. Discuss various types of system calls, operations on processes and the communication pattern between two processes. |
| | | | C214.2 | Discuss the concept of threading by understanding various multithreading models and identify various threading issues. Identify and Apply various algorithms for scheduling processes. Understand the concept of process synchronization, problems and solutions relevent to synchronization. |
| | | | C214.3 | Define various characteristics of deadlock, Identify deadlock occurrence and handle deadlock situation. Illustrate the prevention, avoidance, detection and recovery from deadlock. Discuss various memory management strategies. |
| | | | C214.4 | Apply suitable page replacement algorithms, Demand paging concept, frame allocation, understand the concept of virtual memory management concept. Discuss various file concepts, access methods and file protection. Discuss the concept of various allocation methods. |
| | | | C214.5 | Discuss various secondary storage structures. Illustrate various disk scheduling and management techniques. Discuss various concepts of protection and access. Understand the working of the LINUX operating system |
| | | | | Describe the architectural features, design philosophy and instructions of ARM microcontroller. |
| | 18CS44 | C215 | C215.1 | Describe the architectural features, design philosophy and instructions of ARM microcontroller. |
| | | | C215.2 | Apply the knowledge gained for Programming ARM for different applications. |
| | | | C215.3 | Demonstrate the interfacing of external devices and I/O with ARM microcontroller. |
| | | | C215.4 | Interpret the basic hardware components and their selection method based on the characteristics and attributes by integrating firmware of an embedded system. |
| | | | C215.5 | Demonstrate the need of real time operating system for embedded system applications |
| IV Semester | 18CS45 | C216 | C216.1 | Develop C++ programs by using different Object Oriented concepts like inheriretance, polymorphism, nested classes, Constructors, Destructors. |
| | | | C216.2 | Analyze and understand the basic Object Oriented concepts using Java with the help of Data types, variables and arrays, Operators, Control Statements. |
| | | | C216.3 | Inspect inheritances, exceptions, packages concepts and exception handling using JAVA. |
| | | | C216.4 | Utilize the concept of Threading, Multi-threading and event handling for demonstrating real time applications. |
| | | | C216.5 | Analyze simple java applications and GUI using the concepts of applets and swings. |
| | 18CS46 | C217 | C217.1 | Illustrate the basics of computer network, different topologies and the layers of OSI model with its function compared with TCP/IP model. |
| | | | C217.2 | Discuss the physical layer functions. |
| | | | C217.3 | Demonstrate the bandwidth utilization and the different types of switching also make use of different techniques for error detection and correction. |
| | | | C217.4 | Explain different protocols used in Data Link Layer and summarize IPv4 Addressing and subnetting |
| | | | C217.5 | Illustrate Wired and wireless protocols with its applications. |
| | 18CSL47 | C218 | C218.1 | Apply and implement the learned data structures to solve the real world problems. |
| | | | C218.2 | Design algorithms using Divide and Conquer technique and analyze the performance of algorithms |
| | | | C218.3 | Develop variety of algorithms using Greedy technique for graph related problems. |
| | | | C218.4 | Design and implement algorithms using the technique of Dynamic Programming for network related problems |
| | | | C218.5 | Apply the concept of Backtracking for combinatorial problems. |

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| | 18CSL48 | C219 | C219.1 | Demonstrate ALP using ARM7TDMI/LPC2148. |
| | | | C219.2 | Demonstrate to display “Hello World” message using internal UART. |
| | | | C219.3 | Demonstration of ALP to interface and control a DC motor and a Steeper motor |
| | | | C219.4 | Demonstration of ALP to interface 4x4 keyboard to display the key code and interface DAC and ADC to genearate waveforms and determining digital outputs. |
| | | | C219.5 | Demonstrate the use of an external interrupt to toggle an LED On/Off and display the Hex digits 0 to F by interfacing 7-segment LED. |
| VI Semester | 17CS61 | C318 | C318.1 | Outline the various cyber attacks, defence strategies & techniques, Cipher properties and cryptographic techniques |
| | | | C318.2 | Analyze the vulnerabilities in any computing system and hence be able to design a security solution using various cryptographic algorithms like RSA, Hashing and Diffie Hellman. |
| | | | C318.3 | Discover the efficient key manangement techniques, Simple authentication and Mutual authentication, IKE,Kerberos, NS-Protocol and SSL. |
| | | | C318.4 | Analyze the vulnerabilities, attacks in WLAN Security as per IEEE 802.11 Standards based on authentication, confidentiality and integrity. |
| | | | C318.5 | Outline the Ethics and Cyber laws to create awareness about cyber crimes based on e-commerce and EVM cards. |
| | 17IS62 | C319 | C319.1 | Choose an appropriate file structure for storage representation and their mechanism to store different types of files. |
| | | | C319.2 | Explain the oraganization of files using object oriented concepts and retrieve the same using advanced concepts like inverted lists, selective indexes. |
| | | | C319.3 | Identify a suitable sorting techniques to arrange the data and use of multi-level indexing and B-tree techniques for organization of data in a file. |
| | | | C319.4 | Choose a suitable indexing mechanism and hashing technique for better performance of file accessing. |
| | | | C319.5 | Examine some advanced file storage structures like extendible hashing for better performance. |
| | 17IS63 | C320 | C320.1 | Explain bugs, Errors,Failures and outline the importance of software testing |
| | | | C320.2 | Analyze the functional nature of a program to identify test cases for the program and apply various testing techniques to develop range based test cases |
| | | | C320.3 | Demonstrate the Path testing and Dataflow testing for designing of flow graph for creating run time support for test execution |
| | | | C320.4 | Explain the principles that characterize various approaches for testing.Describe planning and monitoring of the processes interwined with documentation |
| | | | C320.5 | Illustrate the concepts of integration and component based testing techniques and demonstrate the various levels of testing . |
| | 17CS64 | C321 | C321.1 | Discuss various Components of an Operating System and understand the management of process, memory and storage. Discuss various types of system calls, operations on processes and the communication pattern between two processes. |
| | | | C321.2 | Discuss the concept of threading by understanding various multithreading models and identify various threading issues. Identify and Apply various algorithms for scheduling processes. Understand the concept of process synchronization, problems and solutions relevent to synchronization. |
| | | | C321.3 | Define various characteristics of deadlock, Identify deadlock occurrence and handle deadlock situation. Illustrate the prevention, avoidance, detection and recovery from deadlock. Discuss various memory management strategies. |
| | | | C321.4 | Apply suitable page replacement algorithms, Demand paging concept, frame allocation, understand the concept of virtual memory management concept. Discuss various file concepts, access methods and file protection. Discuss the concept of various allocation methods. |
| | | | C321.5 | Discuss various secondary storage structures. Illustrate various disk scheduling and management techniques. Discuss various concepts of protection and access. Understand the working of the LINUX operating system |
| VI Semester | 17CS653 | C324 | C324.1 | Explain the importance of operations research by formulating an LPP model for the real world problems and Solve it using graphical method and analytical method. |
| | | | C324.2 | Explain the essence of the simplex method and Solve the various LP problems by using appropriate optimization techniques. |
| | | | C324.3 | Apply the principle of duality and make use of dual simplex method to solve the various LP problems. |
| | | | C324.4 | Solve the transportation and assignment problem and obtain the optimal solution. |
| | | | C324.5 | Apply the game theory concepts for the decision making problems and outline the meta heuristics techniques. |
| | 17CS664 | C329 | C329.1 | Examine Python syntax and semantics and demonstrate proficiency in Python flow control, functions, String handling and File Systems. |
| | | | C329.2 | Apply python programming in Iteration, Strings, Files to gain effective skill in python. |
| | | | C329.3 | Create, run and manipulate Python Programs using core data structures Lists, Dictionaries, Tuples, Regular Expressions. |
| | | | C329.4 | Apply python programming in object-oriented concepts like Classes and objects, Classes and Functions, Classes and methods. |
| | | | C329.5 | Illustrate the applications related to Network Programming, Web Services and Databases using Python. |
| | | | C332.1 | Design and develop testcases based on Boundary value Analysis testing method |

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| | 17ISL67 | C332 | C332.2 | Create testcases using Equivalence class partitioning ,execute testcases and discuss the results |
| | | | C332.3 | Design and develop testcases using Decision table approach ,analyze the testcases along with the results |
| | | | C332.4 | Analyze structural testing techniques using Data flow approach. |
| | | | C332.5 | Examine structural testing through basis path testing technique,discuss the test cases and results |
| | 17ISL68 | C333 | C333.1 | Apply the concepts of Unix IPC to implement a given function. |
| | | | C333.2 | Develop the operations related to files and apply the objectives of file system to produce the given application.. |
| | | | C333.3 | Build a program to implement operations on given file system using indexing |
| | | | C333.4 | Apply hashing alogorithm to implement cosequential and K-way merge |
| | | | C333.5 | Build file application projects using different concepts such as Document processing, transaction management,indexingand hashing, buffer management, configuration management |
| VIII Semester | 15IS81 | C416 | C416.1 | Contrast the Impact and Challenges posed by IoT networks and the precursor for the new architectural models for IoT. |
| | | | C416.2 | Discuss the deployment of smart objects and the technologies used to connect them to network. |
| | | | C416.3 | Summarize various IoT protocols for efficient network communication by classifying and comparing them. |
| | | | C416.4 | Explain the need for Data Analytics and Security in IoT. |
| | | | C416.5 | Illustrate different sensor technologies for sensing real world entities and identify the application of IoT in Industry. |
| | 15CS82 | C417 | C417.1 | Summarize the conceptualisation of HDFS and MapReduce framework, benchmarks along with practicing the MapReduce programming. |
| | | | C417.2 | Demonstrate Hadoop related tools for Big Data Analytics and perform basic Hadoop Administration. Also illustrate the Hadoop YARN Applications and Apache Ambari. |
| | | | C417.3 | Identify and Illustrate the role of Business Intelligence and its applications. Further summarize the concept of Data Mining, Data warehousing and Visualization indecision making. |
| | | | C417.4 | Inference the importance of core data mining techniques for data analytics like Regression, Artificial Neural Networks, Cluster Analysis. |
| | | | C417.5 | Inspect and contrast outcomes of different Text Mining TechniquesNaïve-Bayes Analysis, Support Vector Machines, Web Mining,Social Network Analysis. |
| | 15CS832 | C419 | C419.1 | Identify and Explain the importance of a good Interface, its characteristics and explain how to manipulate directly with a graphical system. Explain the popularity, characteristics and principles of a Web User Interface |
| | | | C419.2 | Explain various obstacles and issues in designing a good Interface for a graphical system. Identify and explain the importance of core interfacing considerations to be taken while interface designing. |
| | | | C419.3 | Explain various characteristics, components, presentation styles of Windows. Explain Screen based controls and Device based controls |
| | | | C419.4 | Explain about the addition of text to the web pages by learning about various icons, Image and multimedia coloring. Explain the importance of effective feedback guidance and assistance. |
| | | | C419.5 | Identify and explain various kinds of testing prototypes for interfaces. Explain the concept of retests, hypermedia and discuss various available software tools |
| | 15CS834 | C421 | C421.1 | Illustrate the importance of system simulation and make use of different techniques to simulate various systems. |
| | | | C421.2 | Analyze the real world phenomena by using appropriate statistical models and perform the the analysis of queing models through simulation. |
| | | | C421.3 | Analyze and examine the properties of random numbers and generate random variates using different techniques. |
| | | | C421.4 | Examine the use of input models in simulation by choosing the statistical distributions and perform the output analysis of simulation. |
| | | | C421.5 | Interpret the output performance of simulation data and discuss the verification and validation process of the simulation model. |
| | 15IS84 | C422 | C422.1 | Relate the Hypothesis and basic knowledge acquired and apply them to the real-world scenario. |
| | | | C422.2 | Realize and report the structural flow of the organization and critical issue management process. |
| | | | C422.3 | Realize and practice the modern tools and techniques to solve complex engineering problems at appropriate level |
| | | | C422.4 | Demonstrate Professional values by satisfying requirements and code of conduct of Industrial practices |
| | | | C422.5 | Interact effectively with industrial stakeholders to acquire the experience and enable life-long learning |
| | | | C422.6 | Monitor the workflow day to day activities and document the findings in a presentable format |
| | | | C422.7 | Present effectively the knowledge and experience gained during Internship. |
| | 15ISP85 | C423 | C423.1 | Acquire and evaluate latest developments in the research regarding technological advancement in engineering disciplines and their impact on social, cultural, environmental and legal aspects |
| | | | C423.2 | Analyse complex Engineering problems and apply appropriate engineering tools and techniques in design process |
| | | | C423.3 | Work collaboratively with interdisciplinary departments, industries and agencies while planning and executing the project/research to appraise the advance technologies |
| | | | C423.4 | Design and develop solutions to the complex engineering problems through innovative approaches |
| | | | C423.5 | Execute responsibilities as a team member and contribute innovative ideas to accomplish the defined objectives and outcomes |
| | | | C423.6 | Demonstrate a responsible, ethical and professional attitude regarding the role of engineers in society, including financial and cultural aspects |

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| | | | **C423.7** | Prepare a high-quality engineering documents and exhibit a clear and coherent presentation of project/research findings to a range of technical and nontechnical audiences |
| | **15ISS86** | **C424** | **C424.1** | Identify the research papers/applied knowledge resources on latest trends in area of interest and formulate objectives of the study. |
| | | | **C424.2** | Acquaint literatures review methods and identify the significant technical information relevant to selected topic. |
| | | | **C424.3** | Interpret the observations with hypothesis and summarize the conclusions. |
| | | | **C424.4** | Adopting logical though process and sift the findings efficiently to produce well-structured and tailored report. |
| | | | **C424.5** | Prepare and present the outcomes of the observations and suggestions to improve the future scope. |