

Department of Information Science & Engineering

	Ţ	H		2020-21-COs-CO-PO-PSO-MAPPING (ODD-EVEN) COURSE OUTCOMES			
Or: 140	SUBJECT CODE	COURSE	CO NO.	COURSE OUTCOME DESCRIPTION			
Use Laplace transform and inverse Laplace transform in solving differential/integr							
			C201.1	equation arising in network analysis, control systems and other fields of engineering			
	T31	1	C201.2	Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory			
	18MAT31	C201	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	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.			
			C201.5	Determine the externals of functionals using calculus of variations and solve problem arising in dynamics of rigid bodies and vibrational analysis.			
			C202.1	Acquire the fundamental knowledge of various types of data structures and pointers using that knowledge and design the programs using pointers.			
	32	2	C202.2	Apply the fundamental programming knowledge of data structures to design abstract data types such as stack, queue and use them for solving problems.			
	18CS32	C202	C202.3	Implement various functions for implementation of singly linked lists, circular linked lists and doubly linked list.			
			C202.4	Implement and apply the concept of binary trees and binary search tree data structure			
			C202.5	Infer the knowledge of Graph representations, Graph problems ans hashing Technique Solve problems on Sorting and searching methods.			
			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.			
	18CS33	C203	C203.3	Explain the gates and its use in designing various data processing circuits.			
	1		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 register and counters.			

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		C204	C204.1	Demonstrate an understanding of the design of the functional units of a digital computer system											
	4		C204.2	Demonstrate the design of control unit and Explain the instruction set, instruction formats and addressing modes.											
	18CS34		C204.3	Discuss and analyze memory hierarchy and its impact on computer Cost/performance.											
			C204.4	Apply the representations techniques of numbers stored in digital computers and perform Basic arithmetic Operations.											
ıe			C204.5	Explain the concepts of computer organization in the design of various embedded systems examples											
3rd Semester			C205.1	Explain the process of building software, discuss professional and ethical responsibility and describe the concept of Requirements Collection and Requirement											
3			C205.2	Explain the fundamentals of Object-Oriented concepts and discuss the class modelling concepts.											
	18CS35	C205	C205.3	Demonstrate 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.											
			C206.1	Demonstrating the correctness of an argument using mathematical logic and construct the proofs for quantifiers.											
	9	C206	C206.2	Using the concepts of mathematical induction construct the proofs and solve the counting problems.											
	18CS36		C206.3	Solve the problems associated with relations and functions.											
			C206.4	Solve the problems involving 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.											
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			C207.1	Demonstrate Analog Electronic Circuits based on Op-Amps and 555 Timers.											
	78	C207	C207	8CSL3/ C207	C207	C207								C207.2	Demonstrate the implementation of combinational logic circuits using digital logic design.
	18CSL37						C207.3	Demonstrate the implementation of sequential logic circuits using digital logic design.							
	1		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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		G200.1	Demonstrate array and string data structures by designing and implementing the
		C208.1	relevant function required
∞		C208.2	Demonstrate stack and queue data structures by designing and developing the required functions with its applications
18CSL38	C208	C208.3	Demonstrate the concepts of SLL,DLL and SCLL by designing and developing the required functions with its applications
1		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
		C210.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory
		C210.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
18MAT41	C210	C210.3	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
ï		C210.4	Make use of the correlation and regression analysis to fit a suitable mathematical mod for the statistical data.
		C210.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.
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		C211.1	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
		C211.2	To dissect and solve recurrences describing the performance of divide-and-conquer algorithms with different examples. Also demonstrate the decrease and conquer paradigm
18CS42	C211	C211.3	Illustrate the greedy technique and explain when an algorithmic design situation calls for it. Synthesize greedy algorithms, and analyze them. Also dissect the transform and conquer approach
		C211.4	Synthesize dynamic-programming algorithms, and analyze them using different examples
		C211.5	Ability to apply algorithm design principles to derive solutions for real life problems, NP class problems and comment on complexity of solution.

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		C215.1	Illustrate the basics of computer network, different topologies and the layers of OSI model with its function compared with TCP/IP model.
		C215.2	Discuss the physical layer functions.
18CS46	C215	C215.3	Demonstrate the bandwidth utilization and the different types of switching also make use of different techniques for error detection and correction.
-		C215.4	Explain different protocols used in Data Link Layer and summarize IPv4 Addressing and subnetting
		C215.5	Illustrate Wired and wireless protocols with its applications.
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		C216.1	Apply and implement the learned data structures to solve the real world problems.
7:		C216.2	Design algorithms using Divide and Conquer technique and analyze the performance of algorithms
18CS47	C216	C216.3	Develop variety of algorithms using Greedy technique for graph related problems.
18	S	C216.4	Design and implement algorithms using the technique of Dynamic Programming for
			network related problems
			Apply the concept of Backtracking for combinatorial problems.
			Apply the concept of Backtracking for combinatorial problems.
		C217.1	
		C217.1 C217.2	Apply the concept of Backtracking for combinatorial problems. Demonstrate ALP using ARM7TDMI/LPC2148.
18CS48	C217	C217.1 C217.2	Apply the concept of Backtracking for combinatorial problems. Demonstrate ALP using ARM7TDMI/LPC2148. Demonstrate to display "Hello World" message using internal UART. Demonstration of ALP to interface and control a DC motor and a Steeper motor
18CS48	C217	C217.1 C217.2 C217.3 C217.4	Apply the concept of Backtracking for combinatorial problems. Demonstrate ALP using ARM7TDMI/LPC2148. Demonstrate to display "Hello World" message using internal UART. Demonstration of ALP to interface and control a DC motor and a Steeper motor Demonstration of ALP to interface 4x4 keyboard to display the key code and interface
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18CS48	C217	C217.1 C217.2 C217.3 C217.4	Apply the concept of Backtracking for combinatorial problems. Demonstrate ALP using ARM7TDMI/LPC2148. Demonstrate to display "Hello World" message using internal UART. Demonstration of ALP to interface and control a DC motor and a Steeper motor Demonstration of ALP to interface 4x4 keyboard to display the key code and interface DAC and ADC to genearate waveforms and determining digital outputs.
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	C218 C217	C217.1 C217.2 C217.3 C217.4 C217.5	Apply the concept of Backtracking for combinatorial problems. Demonstrate ALP using ARM7TDMI/LPC2148. Demonstrate to display "Hello World" message using internal UART. Demonstration of ALP to interface and control a DC motor and a Steeper motor Demonstration of ALP to interface 4x4 keyboard to display the key code and interface DAC and ADC to genearate waveforms and determining digital outputs. 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. Students are able to understand the necessity of learning a kannada language, tips to learn; and about kannada language.
18KVK49 18CS48		C217.1 C217.2 C217.3 C217.4 C217.5 C218.1 C218.2 C218.3	Apply the concept of Backtracking for combinatorial problems. Demonstrate ALP using ARM7TDMI/LPC2148. Demonstrate to display "Hello World" message using internal UART. Demonstration of ALP to interface and control a DC motor and a Steeper motor Demonstration of ALP to interface 4x4 keyboard to display the key code and interface DAC and ADC to genearate waveforms and determining digital outputs. 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. Students are able to understand the necessity of learning a kannada language, tips to learn; and about kannada language. Students are able to learn kannada alphabets and Pronunciation.

		C219.1	Students are able to understand the history of kannada language, different movementhrough poetry; and grammatical errors in the language which will help them to improve their kannada communication.
		C219.2	Able to understand the usage of different signs while framing sentences; and letter writing practice which will be beneficial for their day today life.
18KAK49	C219	C219.3	Students were expertise to write official letters & government orders through which they will get an idea about the terms and conditions of government sectors.
		C219.4	Students are able to write essay in kannada language, translation from english to kannada; and wide set of kannada vocabulary, which will upkeep their knowledge is kannada.
		C219.5	Students are able to understand kannada usuage in computer, which they can utilize various apllications in their day today life.
		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
18CS51	C301	C301.3	Explain Entrepreneurship, its status in India by identifying various traits of becomm an Entrepreneur
		C301.4	Ientify and Discuss the steps involved in undertaking a project, importance of maintaining reports. Explain Enterprise Resource Planning and its use.
		C301.5	Define and Identify the Government Policies, Institutional Supports available for Sn and Micro Industries through various case studies. Explain the concept of IPR.
		C302.1	Explain principles of application layer protocols.
22	61	C302.2	Analyze transport layer services and infer UDP and TCP protocols.
18CS52	C302	C302.3	Examine routers, IP and Routing Algorithms in network layer.
1		C302.4	Demonstarte Wireless and Mobile Networks covering IEEE 802.11 Standard.
		C302.5	Illustrate Multimedia Networking and Network Management.
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		C303.1	Discuss the introduction into databases, overview of database languages and architecutures. Identify, analyze and define database objects, enforce integrity constraon a database using RDBMS
23	~	C303.2	Apply Structured Query Language (SQL) for database creation and manipulation.
18CS53	C303	C303.3	Examine the usage of relational algebra in database applications.
Ĩ		C303.4	Apply normalization to the database design theory and analyse the normalization algorithms.
		C303.5	Design database applications and demonstarte the concepts of transaction processing concurrency control and recovery in databases.

		C304.1	Acquire the fundamental understanding of the central concepts of automata theory and theory of computation
		C304.2	Explain the equivalence between the different models of compution for the given formal languages.
18CS54	C304	C304.3	Design grammars and recognizers for different formal languages and become knowledgeable about restricted models of computation.
		C304.4	Develop skills in formal reasoning and simplification of a problem to a formal model.
		C304.5	Classify a problem with respect to different models of computation.
		C305.1	Demonstrate proficiency in handling of loops and creation of functions.
		C305.2	Identify the methods to create and manipulate lists, tuples and dictionaries.
18CS55	C305	C305.3	Discover the commonly used operations involving regular expressions and file system
180	၂ ဗ	C305.4	Interpret the concepts of Object-Oriented Programming as used in Python.
		C305.5	Determine the need for scraping websites and working with CSV, JSON and other fil formats.
		C306.1	Interpret the UNIX architecture and features of Linux operating system. Demonstrate the basic commands for file handling system and process control
929	90	C306.1	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of
18CS56	C306	C306.2	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of
18CS56	C306	C306.2	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of filters and their need in UNIX and apply them to various shell programming.
18CS56	C306	C306.2 C306.3 C306.4	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of filters and their need in UNIX and apply them to various shell programming. Make use of the UNIX File API provided in the unix environment system.
18CS56	C306	C306.2 C306.3 C306.4	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of filters and their need in UNIX and apply them to various shell programming. Make use of the UNIX File API provided in the unix environment system. Demonstarte the application/service over a UNIX system.
18CS56	C306	C306.2 C306.3 C306.4 C306.5	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of filters and their need in UNIX and apply them to various shell programming. Make use of the UNIX File API provided in the unix environment system. Demonstarte the application/service over a UNIX system.
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		C306.2 C306.3 C306.4 C306.5 C307.1 C307.2	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of filters and their need in UNIX and apply them to various shell programming. Make use of the UNIX File API provided in the unix environment system. Demonstarte the application/service over a UNIX system. Explain the signal ,daemon process and client server model. Analyze the networking scenarios with respect to implementation issues
18CSL57 18CS56	C307	C306.2 C306.3 C306.4 C306.5 C307.1 C307.2 C307.3	the basic commands for file handling system and process control Illustrate the changing of file permission and owenership. Discuss the importance of filters and their need in UNIX and apply them to various shell programming. Make use of the UNIX File API provided in the unix environment system. Demonstarte the application/service over a UNIX system. Explain the signal ,daemon process and client server model. Analyze the networking scenarios with respect to implementation issues Demonstrate the working of networking concepts.

		C308	C308.1	Use SQL programming and different concepts of DBMS to create, update and query on the Library and College databases.				
			C308.2	Demonstarte SQL programming and different concepts of DBMS to create, update and query on the Order database.				
	18CSL58		C308.3	Illustrate the concepts of SQL programming and DBMS to create, update and query on the Movie database.				
			C308.4	Create, update and query on the Company database by using different concepts of DBMS and SQL programming.				
			C308.5	Design, implement and demonstrate a mini project using front end tools and database and Compile the working with well document using modern tool.				
			C310.1	Choose an appropriate file structure for storage representation and their mechanism to store different types of files.				
			C310.2	Explain the oraganization of files using object oriented concepts and retrieve the same using advanced concepts like inverted lists, selective indexes.				
	18IS61	C310	C310.3	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.				
			C310.4	Select suitable indexing, B+ tree mechanism and hashing technique for better performance of file accessing.				
			C310.5	Examine some advanced file storage structures like extendible hashing for better performance.				
			C311.1	Understand the concepts of testing and apply to derive different test cases				
			C311.2	Analyze and compare the different testing techniques				
;	62	C311	C311.3	Apply the appropriate testing techniques in classifying the problem				
	18IS62		C311.4	Demonstrate the Path testing and Dataflow testing for designing of flow graph for creating run time support for test execution				
			C311.5	Create appropriate document for the software artifact				
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			C312.1	To interpret the basics of web page design using HTML and CSS syntax and semantics				
	863	2	C312.2	Discuss the important components of HTML5 documents and use HTML5 to create web pages				
	18CS63	C312	C312.3	Using JavaScript in web pages to enhance function and appearance of web pages				
			C312.4	To develop dynamic web pages using PHP				
				Illustrate JavaScript frameworks like jQuery and also discuss the role of XML and				

		C313	C313.1	Describe the data warehouse and OLAP technology for understanding the overall data mining and knowledge discovery process.					
	41		C313.2	Discuss the implementation aspects of data warehouse and illustrate the importance of data for the mining process.					
6th Semester	18CS641		C313.3	Use the association rules for discovering important relationships hidden in large data sets.					
Sen			C313.4	Solve many diverse applications using different classification techniques.					
6th			C313.5	Apply the concepts of clustering for understanding data and solving different practical problems.					
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				Understand the OOPs concepts & basics of java programming					
	*		C318.2	Identify the use of classes, interface, packages in solving specific problems					
	18**65***	C318	C318.3	Analyze the use of Single threading and multithreading programs using synchronization and handle the exceptions to increase the performance of program.					
	18		C318.4	Demonstrate the importance of collection framework in developing effective programs.					
			C318.5	Design GUI based applications using applets					
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		C322	C322.1	Design and develop testcases based on Boundary value Analysis testing method					
	9		C322	C322.2	Create testcases using Equivalence class partitioning ,execute testcases and discuss the results				
	18ISL66			C322	C322	C322	C322	C322	C322
			C322.4	Analyze structural testing techniques using Data flow approach.					
			C322.5	Examine structural testing through basis path testing technique, discuss the test cases and results					
			C323.1	Apply the concepts of Unix IPC to implement a given function.					
	7		C323.2	Illustrate the basic operations related to files and apply the objectives of file system to produce the given application.					
	18ISL67	C323	C323.3	Build a program to implement operations on given file system using indexing					
	181	Ü	C323.4	Apply hashing alogorithm to implement cosequential and K-way merge					
			C323.5	Build file application projects using different concepts such as Document processing, transaction management, indexing and hashing, buffer management, configuration management					
			C324.1	Create and debug various Android Applications by setting up Android development environment with necessary virtual devices using Android Virtual Device Manager.					
	∞		C324.2	Demonstrate adaptive, responsive user interfaces that work across a wide range of devices and analyse the various APIs used in developing responsive Android					
	18CSMP68	C324	C324.3	Applications Demonstrate various APIs and methods used for storing, sharing and retrieving data in Android applications.					
	180		C324.4	Examine the different permissions and Security Aspects available for Android applications and discuss its roles in different usecaes.					
			C324.5	Design, implement and demonstrate a mini project using Android Development Tool Kit and Compile the working with well document using modern tool.					

		C401.1	To interpret the basics of web page design using HTML and CSS syntax and semantics
		C401.2	Discuss the important components of HTML5 documents and use HTML5 to create web pages
17CS71	C401	C401.3	Using JavaScript in web pages to enhance function and appearance of web pages
1		C401.4	To develop dynamic web pages using PHP
		C401.5	Illustrate JavaScript frameworks like jQuery and also discuss the role of XML and AJAX in web applications
		C402.1	Identify and describe a design pattern, Classify design pattern catalogue, explain various object oriented design concepts.
		C402.2	Summarize the requirements, conceptual classes and relationships among the classes.
171S72	C402	C402.3	Explain various architectural styles with various case studies.
		C402.4	Explain the concepts of Interactive systems and summarize MVC architecture.
		C402.5	Identify the design process related to Distributed Objects and describe its roles in building an object-oriented system.
		C403.1	Understanding of the fundamental issues and challenges of machine learning: data, model selection, model complexity
		C403.2	Analyze of the strengths and weaknesses of many popular machine learning approaches
17CS73	C403	C403.3	Analyze the usage of neural networks, Bayes classifier and k nearest neighbor for given problem under study to infer its efficacy.
		C403.4	Apply mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised, un-supervised learning and reinforcement learning
		C403.5	Design and implement various machine learning algorithms in a range of real-world applications.
		C406.1	Illustrate the Cryptanalysis using various Ciphers
		C406.2	Apply the Hash techniques in Digital platforms to enhance security
17CS743	C406	C406.3	Analyze the vulnerabilities in the existing system using Crytographic protocols
1.		C406.4	Explain the need of Key management
		C406.5	Outline the need for security in various Digital world applications

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7th Sen		C410	410.1	Discuss the importance and the roles of Information Systems in the business processes and also understand the basic competitive strategies.					
	3		410.2	Determine various cross functional enterprise systems and how they can provide significant business value to a company.					
	17IS753		410.3	Summarizing the benefits and challenges of CRM, ERP and SCM.					
	1		410.4	Examine the needs of essential processes, categories and business values of e- commerce applications					
			410.5	Explain the business process evolutions and the use of decision support systems to tackle the changes.					
			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.					
	17CSL76	C412	C412.3	Demonstrate the implementation, training and testing of an Artificial Neural Network using Backpropagation Algorithm.					
	17		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.					
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			C413.1	Analyze the designing of the web pages using html,CSS and Javascript.					
	71.	3	C413.2	Demonstrate an XML document designed to store the information in a webpage and use CSS to display the document					
	17CSL <i>7</i> 7	C413	C413.3	Examine a PHP program to analyze the server side scripting technologies					
	1		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.					
		C414	C414.1	Acquire and evaluate latest developments in the research regarding technological advancement in engineering disciplines and their impact on social, cultural, environmental and legal aspects					
								C414.2	Analyse complex Engineering problems and apply appropriate engineering tools and techniques in design process
	8.								C414.3
	17ISP78		C414.4	Design and develop solutions to the complex engineering problems through innovative approaches					
			C414.5	Execute responsibilities as a team member and contribute innovative ideas to accomplish the defined objectives and outcomes					
			C414.6	Demonstrate a responsible, ethical and professional attitude regarding the role of engineers in society, including financial and cultural aspects					
			C414.7	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					

		C415	C415.1	Contrast the Impact and Challenges posed by IoT networks and the precursor for the new architectural models for IoT.															
			C415.2	Discuss the deployment of smart objects and the technologies used to connect them to network.															
	17CS81		C415.3	Summarize various IoT protocols for efficient network communication by classifying and comparing them.															
			C415.4	Explain the need for Data Analytics and Security in IoT.															
			C415.5	Illustrate different sensor technologies for sensing real world entities and identify the application of IoT in Industry.															
•			C416.1	Summarize the conceptualisation of HDFS and MapReduce framework, benchmarks along with practicing the MapReduce programming.															
			C416.2	Understand Hadoop related tools for Big Data Analytics and perform basic Hadoop Administration. Also illustrate the Hadoop YARN Applications and Apache Ambari.															
	17CS82	C416	C416.3	Identify and Illustrate the role of Business Intelligence and its applications. Further summarize the concept of Data Mining, Data warehousing and Visualization in decision making.															
			C416.4	Inference the importance of core data mining techniques for data analytics like Regression, Artificial Neural Networks, Cluster Analysis.															
			C416.5	Inspect and contrast outcomes of different Text Mining Techniques Naïve-Bayes Analysis, Support Vector Machines, Web Mining, Social Network Analysis.															
•		C418	C418.1	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															
	2		22	23	25				C418.2	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.									
	17CS832		C418.3	Explain various characteristics, components, presentation styles of Windows. Explain Screen based controls and Device based controls															
			C418.4	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.															
			C418.5	Identify and explain various kinds of testing prototypes for interfaces. Explain the concept of retests, hypermedia and discuss various available software tools															
			C420.1	Illustrate the importance of system simulation and make use of different techniques to simulate various systems.															
ı	4	C420	/CS834 C420	C420	C420	C420	_	4	4	4								C420.2	Analyze the real world phenomena by using appropriate statistical models and perform the the analysis of queing models through simulation.
8th Semester	17CS834						C420.3	Analyze and examine the properties of random numbers and generate random variates using different techniques.											
8th S	-		C420.4	Examine the use of input models in simulation by choosing the statistical distributions and perform the output analysis of simulation.															
			C420.5	Interpret the output performance of simulation data and discuss the verification and validation process of the simulation model.															

17IS84	C421	C421.1	Demonstrate the application of knowledge and skillsets acquired from the course and workplace in the assigned job functions.
		C421.2	Use the work habits of internship carried out industry/R&D Organization/Research Institute/Educational Institute of repute for job success.
		C421.3	Determine the career options by considering opportunities in industry/R&D Organization/Research Institute/Educational Institute of repute.
		C421.4	Build a well-structured report of work experience and present it to the supervisor.
		C421.5	Show professional ethics by practicing a positive outlook during the internship.
17ISP85	C422	C422.1	Acquire and evaluate latest developments in the research regarding technological advancement in engineering disciplines and their impact on social, cultural, environmental and legal aspects
		C422.2	Analyse complex Engineering problems and apply appropriate engineering tools and techniques in design process
		C422.3	Work collaboratively with interdisciplinary departments, industries and agencies while planning and executing the project/research to appraise the advance technologies
		C422.4	Design and develop solutions to the complex engineering problems through innovative approaches
		C422.5	Execute responsibilities as a team member and contribute innovative ideas to accomplish the defined objectives and outcomes
		C422.6	Demonstrate a responsible, ethical and professional attitude regarding the role of engineers in society, including financial and cultural aspects
			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
17ISS86	C423	C423.1	Identify the research papers/applied knowledge resources on latest trends in area of interest and formulate objectives of the study.
		C423.2	Acquaint literatures review methods and identify the significant technical information relevant to selected topic.
		C423.3	Interpret the observations with hypothesis and summarize the conclusions.
		C423.4	Adopting logical though process and sift the findings efficiently to produce well-structured and tailored report.
		C423.5	Prepare and present the outcomes of the observations and suggestions to improve the future scope.