



Department of Information Science & Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix
Batch 2017-21
Semester-I/II

Subject: Programming in C & Data Structures												Subject Code: 17PCD13/23			
Course Outcomes															
C103.1	Achieve Knowledge on computers and basic concepts of networks.														
C103.2	Apply the basic principles of design and development of C Programming.														
C103.3	Design and development of modular programming skills.														
C103.4	Demonstrate Arrays and Strings in C programming concepts.														
C103.5	Illustrate the basic concepts of Structures, unions, Pointers and Preprocessor Directives.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C103.1	3	2	2											2	
C103.2	3	3	2	3										2	
C103.3	2	3	3	2	2									2	
C103.4	2	3	3	2										2	
C103.5	3	2	2	2										2	
C103	2.6	2.6	2.6	2.25	2									2	

Subject: Computer Programming Lab												Subject Code: 17CPL16/26			
Course Outcomes															
C106.1	Understand the knowledge on simple applications in C using conditional statements and looping concepts														
C106.2	Demonstrate and implement applications using arrays and strings														
C106.3	Apply knowledge on functions, recursions, pointers and structures.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C106.1	3	2	2	2										3	
C106.2	3	3	2	2										3	
C106.3	3	3	3	3	1									3	
C106	3.0	2.67	2.33	2.33	1.0									3	

Semester-III

Subject: Engineering Mathematics-III													Subject Code: 17MAT31		
Course Outcomes															
C201.1	Know the use of periodic signals and Fourier series to analyze circuits and systems communication.														
C201.2	Explain the general linear system theory for continuous - time signals and digital signal processing using the Fourier transform and z-transform.														
C201.3	Employ appropriate numerical methods to solve algebraic and transcendental equations.														
C201.4	Apply Green's theorem, Divergence theorem and Stokes theorem in various application in the field of electro-magnetic and gravitational fields and fluid flow problems.														
C201.5	Determine the externals of functional and solve the simple problems for calculus of variations. Utilize the concepts of functional and their variations in the applications of communication systems, decision theory, synthesis and optimization of digital circuits.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C201.1	3	2											2		
C201.2	3	2											3		
C201.3	3	2											3		
C201.4	3	2											2		
C201.5	3	2											2		
Average	3	2											2		

Subject: Analog And Digital Electronics													Subject Code: 17CS32		
Course Outcomes															
C202.1	Ability to use the JFETs, MOSFETs, Operational Amplifier circuits and their applications and its characteristics in the circuit configuration.														
C202.2	Implement the expressions in Combinational Logic circuit, Simplification Techniques using Karnaugh Maps, apply QuineMcClusky technique and study the related applications														
C202.3	Analyze and discuss Operation of Decoders, Encoders, Multiplexers, Adders and Sub tractors														
C202.4	Ability to explain the Significance of Latches, Flip-Flops and Designing Registers for different scenarios.														
C202.5	Ability to recognize the various complicated issues with respect to performance of Synchronous and Asynchronous counters in Sequential Circuits and design of A/D & D/A converters.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C202.1	3	2	2										2		
C202.2	2	2		2									3		
C202.3	1			1	2								3		
C202.4	2		3	2	1								2		
C202.5	2	2		2									2		
C202	2	2	2.5	1.75	1.5								2.4		

Subject: Data Structures and Applications													Subject Code: 17CS33		
Course Outcomes															
C203.1	Able to understand fundamentals of C language and definition of data structures														
C203.2	Analyze and demonstrate the stacks, queues operations and its applications														
C203.3	Create data storage using linked lists concepts and demonstrate its applications														
C203.4	Construct trees data structures and perform operations such as traversals, searching and expression evaluation.														
C203.5	Use graph based data structures approach for storing, sorting ,searching of data and understand file handling basics														

CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C203.1	2	2	2										1		
C203.2	2	2	2										2		
C203.3	3	2	3		2								3		
C203.4	2	2	3	2									2		
C203.5	1	2	3	3	2								2		
C203	2	2	2.6	2.5	2								2		

Subject: COMPUTER ORGANIZATION												Subject Code: 17CS34			
Course Outcomes															
C204.1	Understand the basic organization of a computer system														
C204.2	Demonstrate functioning of different subsystems such as processor, input/output, memory?														
C204.3	Ability to design memory organization like simple SRAM and DRAM														
C204.4	Ability to perform basic arithmetic operations														
C204.5	Understand hardwired control and micro programmed control, embedded and other computing systems														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C204.1	3		1									2	2		
C204.2	3	2	2										2		
C204.3	2	2	2										2		
C204.4	3	3	3										2		
C204.5	2	1	1										2		
C204	2.6	2	1.8									2	2		

Subject: Unix And Shell Programming												Subject Code: 17CS35			
Course Outcomes															
C205.1	Explain UNIX system and use different commands.														
C205.2	Compile Shell scripts for certain functions on different subsystems.														
C205.3	Demonstrate use of editors and Perl script writing														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C205.1	3	1	2	1	2								1		
C205.2	2	2	2		1	2	2			2			1		
C205.3	2			2	2			2	2	1			1		
C205	2.33	1.5	2	1.5	1.66	2	2	2	2	1.5			1		

Subject: Discrete Mathematical Structures												Subject Code: 17CS36			
Course Outcomes															
C206.1	Verify the correctness of an argument using propositional of an argument using propositional and predicate logic and truth table.														
C206.2	Demonstrate the ability to solve problems using counting techniques and combinatorics in the context of discrete probability.														

C206.3	Solve problems involving recurrence relations and generating functions.														
C206.4	Construct proofs using direct proof, proof by contraposition, proof of contradiction, and proof by cases and mathematical induction.														
C206.5	Explain and differentiate graphs and trees.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C206.1	3	2	2	3									3		
C206.2	3	3	2	3								1	2		
C206.3	2	3	3	2						1		1	3		
C206.4	2	3	-	2								1	2		
C206.5	3	2	3	2						1			2	2	
C206	2.6	2.3	2.0	2.4						1.0		1.0	2.4	2.0	

Subject: Analog And Digital Electronics laboratory												Subject Code: 17CSL37			
Course Outcomes															
C207.1	Make Use of various Electronic devices like cathode ray oscilloscope, signal generators, digital trainer kit, multimeter and components like resistor, capacitor, op-amp and integrated circuit.														
C207.2	Design and demonstrate various combinational logic circuits														
C207.3	Design and demonstrate various types of counters and Registers using Flip-flops														
C207.4	Make Use of simulation package to design analog and digital circuits.														
C207.5	Understand the working and Implementation of ALU														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C207.1	1		3						1				2		
C207.2			3	1					1	2			2		
C207.3			2	2					2				2		
C207.4	2				2								2		
C207.5	2		2										2		
C207	1.67		2.5	1.5	2				2	2			2		

Subject: Data Structures Laboratory												Subject Code: 17CSL38			
Course Outcomes															
C208.1	Able to implement linear and nonlinear data structures and understand its application.														
C208.2	Create and analyze searching algorithm in data structures.														
C208.3	Demonstrate data structure for solving real world problem.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

C208.1	1	2											1		
C208.2		3	3											2	
C208.3			3											2	
C208	1	2.5	3										1	2	

Semester-IV

Subject: Complex Analysis, Probability And Statistical Methods												Subject Code: 17MAT41			
Course Outcomes															
C209.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory														
C209.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing														
C209.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.														
C209.4	Make use of correlation and regression analysis to fit a suitable mathematical model for the statistical data.														
C209.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C209.1	3	2													
C209.2	3	2													
C209.3	3	2													
C209.4	3	2													
C209.5	3	2													
C209	3	2													

Subject: Object Oriented Concepts												Subject Code: 17CS42			
Course Outcomes															
C210.1	Explain the object-oriented concepts using C++ and JAVA														
C210.2	Develop computer programs to solve real world problems in C++.														
C210.3	Develop computer programs to solve real world problems by using multithreading and exception handling, event handling in Java.														
C210.4	Develop simple GUI interfaces for a computer program to interact with users, and tounderstand the event-based GUI handling principles using Applets and swings.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C210.1	2	3	3	2									2		
C210.2	3	3	3	2	2								2		
C210.3	2	3	3	3	2	2							2		

C210.4	3	3	3	3	2														2
C210	2.5	3	3	2.5	2	2													2

Subject: Design and analysis of Algorithms													Subject Code: 17CS43					
Course Outcomes																		
C211.1	Analyze and compare the running time of algorithms using asymptotic analysis																	
C211.2	Able to describe and apply the method of divide-and-conquer and decrease-and-conquer strategies																	
C211.3	Describe and apply and the dynamic programming and greedy strategy paradigm																	
C211.4	Describe and apply backtracking and branch-and-bound approaches.																	
C211.5	Interpret the efficient algorithms in common engineering design situations, NP, P class problems																	
CO-PO-PSO Mapping																		
COs	POs												PSOs					
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
C211.1	2	3	3	2									2					
C211.2	2	3	3	3	2								3					
C211.3	2	3	3	3	2								2					
C211.4	2	3	2	3	2								3					
C211.5	2	3	3	2	2								2					
C211	2	3	2.8	2.6	2								2.4					

Subject: Microprocessors and Microcontrollers													Subject Code: 17CS44					
Course Outcomes																		
C212.1	Differentiate between microprocessors and microcontrollers																	
C212.2	Design and develop assembly language code to solve problems.																	
C212.3	Gain the knowledge for interfacing various devices to x86 family and ARM processor.																	
C212.4	Demonstrate design of interrupt routines for interfacing devices.																	
CO-PO-PSO Mapping																		
COs	POs												PSOs					
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
C212.1	3		2	2			1					1						
C212.2	3	3	3	3	2					1			2					
C212.3	2	3	3	2	3	3	2					2	3					
C212.4	2	3	3		2					1			2					
C212	2.5	3.0	2.75	2.3	2.3	3	1.5			1.0		1.5	2.3					

Subject: Software Engineering													Subject Code: 17CS45					
Course Outcomes																		
C213.1	Analyze the software engineering practices, software process models and process of requirements																	

	engineering.														
C213.2	Assess ethical and professional responsibility, identify problem domain for developing SRS and to solve the given problems using appropriate process model.														
C213.3	Analyze and design system models, UML diagrams and design patterns.														
C213.4	Formulate a testing strategy and illustrate the software evolution process.														
C213.5	Illustrate the managing skills for quality project activities and rapid development technology.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C213.1	2	2	1	1		2	1			1	2	1	2	C213.1	
C213.2	2	1	1	2		1	1	1			2	1	2	C213.2	
C213.3	2	1	2	1	1						1		2	C213.3	
C213.4	2	1	2	1	1		2					2	2	C213.4	
C213.5	2	2	1	2	1							1	1	C213.5	
C213	2	1.4	1.4	1.4	1	1.5	1.33	1		1	1.6	1.25	1.8	C213	

Subject: DATA COMMUNICATION												Subject Code: 17CS46			
Course Outcomes															
C214.1	Identify the different types of network topologies, layers functionalities, encoding schemes														
C214.2	Compare and contrast conversion techniques (A/D, D/D), bandwidth utilization methods and types of switched networks														
C214.3	Analyze error detection techniques; understand working of Data Link layer protocols.														
C214.4	Examine MAC Protocols and Ethernet technologies														
C214.5	Understand basics of wireless networks, internetworking principles and Internet protocols IPV4, IP6 and ICMP operations														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C214.1	1	1											2		
C214.2	2	3											2		
C214.3	2	3											3		
C214.4	2	2											3		
C214.5	2	2											3		
C214	1.8	2.2											2.6		

Subject: Design and analysis of Algorithms Lab												Subject Code: 17CSL47			
Course Outcomes															
C215.1	Analyze the running time of sorting problems and able to apply implementation of design techniques														
C215.2	Design algorithms using appropriate design techniques divide and conquer, greedy, dynamic														

	programming, and Backtracking etc														
C215.3	Implement a variety of algorithms such as sorting, graph related problems using python or java language.														
C215.4	Analyze and compare the performance of algorithms and Apply learned algorithms design techniques and data structures to solve real world problems														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C215.1	2	3	3	3	3								2		
C215.2	2	3	3	3	3								3		
C215.3	2	3	3	3	3								2		
C215.4	2	3	3	3	3								3		
C215	2	3	3	3	3								2.5		

Subject: Microprocessors and Microcontrollers Lab										Subject Code: 17CSL48					
Course Outcomes															
C216.1	Summarize 80x86 instructionsets and comprehend theknowledge of how assemblylanguage works.														
C216.2	Designand develop assembly programsusing 80x86 assembly languageinstructions														
C216.3	Infer-functioning of hardware devicesand interfacing them to x86family														
C216.4	Choosing ARM & x86 processors for various kinds ofapplications.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C216.1	3	2											2		
C216.2		2		2	2					2			2	1	
C216.3	3	2			2								3		
C216.4	2	1				2							3		
C216	2.6	1.75		2.0	2.0	2.0				2.0			2.5	1.0	

Semester-V

Subject: M&E for IT Industry										Subject Code: 17CS51					
Course Outcomes															
C301.1	Ability to manage people, processes, and resources within a diverse organization, knowledge about planning, staffing, organization, entrepreneur.														
C301.2	Demonstrate an ability to engage in critical thinking by analyzing situations and constructing and selecting viable solutions to solve problems and to work effectively with others														
C301.3	Applying knowledge of current information, theories and models, techniques and practices in all of the major business disciplines including the general areas of Accounting and Finance, Information Technologies, Management, Marketing, and Quantitative Analysis.														
C301.4	Demonstrate knowledge of utilizing the resources available effectively through ERP and make														

	use of IPRs and institutional support in entrepreneurship														
C301.5	Adopting of the key steps in the elaboration of business idea, and about the small scale industries and prepare the project report.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C301.1	2					2			2	2		2	1	2	
C301.2	2					2			2	1		2	2	1	
C301.3	2	1		1								2		1	
C301.4	2			1	1						1	1	2	1	
C301.5	2			1								2	1	2	
C301	2	1		1	1	2			2	1.5	1	1.8	1.5	1.4	

Subject: Computer Network												Subject Code: 17CS52			
Course Outcomes															
C302.1	Examine the principles of application layer protocols.														
C302.2	Recognize transport layer services and infer UDP and TCP protocols.														
C302.3	Analyze router functionality, IP addressing and Routing Algorithms in network layer.														
C302.4	Explore the Wireless and Mobile Networks covering IEEE 802.11 Standard.														
C302.5	Examine And Analyze Multimedia Networking and Network Management through case studies														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C302.1	2	2											2		
C302.2	2		2	1									3		
C302.3	2	3											2		
C302.4				1	2									1	
C302.5					2	2								1	
C302	2	2.5	2	1	2	2							2.3	1	

Subject: Data Base Management Systems												Subject Code: 17CS53			
Course Outcomes															
C303.1	Illustrate the database design for applications														
C303.2	Make use of ER Diagrams and Normalization techniques in DB Applications														
C303.3	Apply concurrency control and recovery mechanism for data base problems														
C303.4	Apply various concepts in Query processing.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C303.1	3	3													
C303.2	2	3		2		3									
C303.3	3	3	3			2									
C303.4	2	2													
C303	2.5	2.6	3	2		2.5									

Subject: Automata Theory and Computability												Subject Code: 17CS54				
Course Outcomes																
C304.1	Formulate a problem with respect to different models of computation															
C304.2	Compare the different models of Computation like Deterministic, Non-deterministic and Software models (Finite Automata, PDA and Turing Machine).															
C304.3	Design Grammars and Automata for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers															
C304.4	Develop skills in formal reasoning and reduction of a problem to a formal model, with an emphasis on semantic precision and conciseness.															
C304.5	Formulate a problem with respect to different models of Computation.															
CO-PO-PSO Mapping																
COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C304.1	2	2	1	3	-	-	-	-	-	-	-	-	2			
C304.2	2	3	2	2	-	-	-	-	-	-	-	-	2			
C304.3	2	3	2	1	-	-	-	-	-	-	-	2	2			
C304.4	3	2	2	2	-	-	-	-	-	-	-	2	2			
C304.5	2	2	2	2	-	-	-	-	-	-	-	2	2			
C304	2.2	2.4	1.8	2								2	2			

Subject: Advance JAVA and J2EE												Subject Code: 17CS553				
Course Outcomes																
C305.1	Understand Java Concepts like enumerations and strings in developing modular programs															
C305.2	Illustrate use of collection framework in developing modular programs.															
C305.3	Understand string handling mechanism															
C305.4	Develop web applications															
C305.5	Illustrate use of database connectivity															
CO-PO-PSO Mapping																
COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C305.1	1	1											1			
C305.2	2	1	1										1			
C305.3		2	1	1									1			

C305.4		2	2		2				2				2		
C305.5		2	2		2				2				2		
C305	1.5	1.6	1.5	1	2				2				1.4		

Subject: Artificial Intelligence												Subject Code: 17CS562			
Course Outcomes															
C306.1	Analyze and identify the problems based on artificial intelligence														
C306.2	Interpret the type of problem to choose suitable technique for solution.														
C306.3	Apply techniques in artificial intelligence technique to solve problems.														
C306.4	Illustrate representation of knowledge in different form.														
C306.5	Interpret various aspects of expert system														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C306.1	2	2		1									2		
C306.2	2	2	1										2		
C306.3	2	2	2		1								2	1	
C306.4	2				1				1	2			2		
C306.5	2				1		1					1	1	1	
C306	2	2	1.5	1	1		1		1	2		1	1.8	1	

Subject: Dot net Framework For Application Development												Subject Code: 17CS564			
Course Outcomes															
C307.1	Build applications on Visual Studio .NET platform by understanding the syntax and semantics of C#.														
C307.2	Demonstrate Object Oriented Programming concepts in C# programming language.														
C307.3	Design custom interfaces and leverage the available built-in interfaces in building complex applications.														
C307.4	Illustrate the use of generics and collections in C#.														
C307.5	Compose queries to query in-memory data.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C307.1	1		3		2									2	
C307.2	1	2											2		
C307.3		2	3	2									2		
C307.4		2	3										2		
C307.5		2	3												
C307	1	2	3	2	2								2	2	

Subject: Computer Networks Laboratory											Subject Code: 17CSL57				
Course Outcomes															
C308.1	Analyze and Compare various networking algorithms to secure data														
C308.2	Demonstrate the concepts of client server communication through socket programming														
C308.3	Analyze the different parameters of network configuration														
C308.4	Analyze transport layer protocols to evaluate congestion in network														
C308.5	Demonstrate the performance of CDMA and GSM using NS2/NS3														
C308.6	Implement Ethernet LAN and ESS in WIRELESS LAN through simulation using NS2/NS3														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C308.1	2	1											1		
C308.2	2			2									2		
C308.3	1	2											2		
C308.4	2	1											2		
C308.5		2			1								2		
C308.6		2			2								2		
C308	1.75	1.6		2	1.5								1.833		

Subject: Data Base Management Systems Lab											Subject Code: 17CSL58				
Course Outcomes															
C309.1	Infer database language commands to create simple database														
C309.2	Analyze the database using queries to retrieve records														
C309.3	Apply pl/sql for processing database														
C309.4	Analyze front ends tools to design forms,report and menus.														
C309.5	Develop solutions using database concepts for real time requirements.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C309.1	3	3			3										
C309.2	2	3		2	3	2									
C309.3	2	2			2	2		3							
C309.4	2	2	2	2	2	2									
C309.5	3	2	2	3	3	2									
C309	2.5	2.5	2	2.5	2.6	2		3							

Semester-VI

Subject: Cryptography, Computer Networks & Cyber Law											Subject Code: 17CS61				
Course Outcomes															

C310.1	Identify cryptographic techniques and its various applications.
C310.2	Examine simple cryptographic algorithms.
C310.3	Analyze various authentication and key agreement protocols.
C310.4	Compare different protocols used in wireless LAN.
C310.5	Analyze the need for cyber Law.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C310.1	1			1									1		
C310.2		1	2						1	1			1		
C310.3	1	2											2		
C310.4													2		
C310.5						1		2						1	
C310	1	1.5	2	1		1		2	1	1			1.5	1	

Subject: FILE STRUCTURES

Subject Code: 17IS62

Course Outcomes

C311.1	Explain different techniques for organizing and manipulation of data in secondary storage which include basic file structure concepts, file operations, secondary storage device and software system.
C311.2	Illustrate management of records and organization of files for performance by applying object-oriented concepts
C311.3	Compare primary and secondary indexing and construct model for implementing consequential processing and sorting large files.
C311.4	Construct B-trees and illustrate indexed sequential access and prefix B+ trees with appropriate data structures.
C311.5	Discuss hashing and its demonstrate collision resolution using differing techniques.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C311.1	1												2		
C311.2			1										2		
C311.3		3	3										2		
C311.4		3	3										2		
C311.5	1	3	3										2		
C311	1	3	2.5										2		

Subject: SOFTWARE TESTING

Subject Code: 17IS63

Course Outcomes

C312.1	Understanding basic terminologies of software testing methods
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C312.2	Derive test cases for any given problem using black box and white box testing														
C312.3	Understanding and apply different levels of testing														
C312.4	Identify the needs of testing process framework														
C312.5	Understanding the need of documenting and analysis and test														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C312.1	1	1													
C312.2		2	2										2		
C312.3	2														
C312.4	1	2													
C312.5										1					
C312	1.3	1.6	2							1			2		

Subject: Operating Systems												Subject Code: 17CS64			
Course Outcomes															
C313.1	Demonstrate need for OS and different types of OS														
C313.2	Apply suitable techniques for management of different resources														
C313.3	Analyze Deadlock characteristics and provide solution to deadlocks, process synchronization & monitors.														
C313.4	Investigate File allocation, Disk access strategies and different concepts of OS in platform of usage through case studies.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C313.1	3	2											2		
C313.2	3	3	2										2		
C313.3	2	3	3										2		
C313.4	2	3	3										2		
C313	2.5	2.75	2.66										2.0		

Subject: Operation Research												Subject Code: 17CS653			
Course Outcomes															
C314.1	Formulate the Linear Programming and solve.														
C314.2	Select and apply optimization techniques for various problems.														
C314.3	Model the given problem as transportation and assignment problem and solve.														
C314.4	Apply game theory for decision support system.														
C314.5	Illustrate the application of metaheuristics														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

C314.1	2					2							1			
C314.2		1	3													
C314.3		2	2													
C314.4	2	1	2													
C314.5		2	3										2		2	
C314	2	1.5	2.5			2							1.5		2	

Subject: Python Application Programming	Subject Code: 17CS664
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Course Outcomes	
C315.1	Apply Python syntax and semantics, flow control, functions, strings, files and object oriented concepts to build applications.
C315.2	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions
C315.3	Develop exemplary applications related to Network Programming, Web Services and Databases in Python.

CO-PO-PSO Mapping																
COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C315.1	2															
C315.2		2														
C315.3			2	2	2							1		2		
C315	2	2	2	2	2							1		2		

Subject: SOFTWARE TESTING LABORATORY	Subject Code: 17ISL67
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Course Outcomes	
C316.1	List out the requirements for the given problem
C316.2	Design and implement the solution for given problem in any programming language
C316.3	Apply the appropriate technique for the design test cases
C316.4	Derive test cases for any given problem
C316.5	Create appropriate document for test cases

CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C316.1	1	2											1		
C316.2		2	3	2									2		
C316.3			3	1									2		
C316.4		1	2	1									2		
C316.5									1	1	1		1		
C316	1	1.6	2.6	1.3					1	1	1		1.6		

Subject: File Structures Laboratory with mini project											Subject Code: 17ISL68				
Course Outcomes															
C317.1	Implement different data organization and manipulation techniques on files														
C317.2	Design and develop indexing and consequential processing for data management in file														
C317.3	Build an application using file organization technique.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C317.1		1	2		2								2		
C317.2		1	2		2								2		
C317.3		1	2		2				2	2	1	1	2		
C317		1	2		2				2	2	1	1	2		

Semester-VII

Subject: Web Technology and its application											Subject Code: 17CS71				
Course Outcomes															
C401.1	Illustrate the semantic structure of HTML and CSS														
C401.2	Compose forms and tables using HTML and CSS														
C401.3	Design C/S program using JS and Server side program using PHP														
C401.4	Infer OO Programming capabilities of PHP														
C401.5	Examine JS frameworks such as jquery and backbone														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C401.1	3		3										3		
C401.2		3	3	3									2		
C401.3		3	3										3		
C401.4	1	2	2	2									2		
C401.5			1										2		
C401	2	2.66	2.4	2.5									2.4		

Subject: Software Architecture & Design Patterns											Subject Code: 17IS72				
Course Outcomes															
C402.1	Identify Design Patterns and state OO concepts														
C402.2	Recognize requirements, Design , implement conceptual classes and relationships														
C402.3	Apply Structural Patterns to develop software components														
C402.4	Illustrate the usage of MVC architecture														
C402.5	Implement OO system by applying suitable pattern														
CO-PO-PSO Mapping															

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C402.1		2	2										3		
C402.2		3	3										3		
C402.3		2	2										3		
C402.4		3	3										3		
C402.5		3	3										3		
C402		2.6	2.6										3		

Subject: Machine Learning												Subject Code: 17CS73			
Course Outcomes															
C403.1	Identify the problems for machine learning and select the either supervised, unsupervised, reinforcement														
C403.2	Differentiate between supervised, unsupervised and reinforcement learning.														
C403.3	Investigate concept learning, ANN, bayes classifier, K-nearest neighbour, K-mean.														
C403.4	Explain theory of probability and statistics related to machine learning.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C403.1	2	2	2	1									2		
C403.2	2	2	3	2	2								2		
C403.3	2	3	3	2	1	2							2		
C403.4	2	2	3	2	2								2		
C403	2	2.2	2.6	1.6	1.6	2							2		

Subject: UNIX SYSTEM PROGRAMMING												Subject Code: 17CS744			
Course Outcomes															
C404.1	Understand the various standards like ANSI C, C++ POSIX and XOPEN standard and API's, UNIX Kernel support for files, process, daemons and signals.														
C404.2	Design and develop commands using various APIs of Files, Process and signals.														
C404.3	Elaborate the need of Interprocess Communication Message Queues, Semaphores Shared memory, client server connections Functions														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C404.1	2		1									1			
C404.2	3	1	3								2		2		
C404.3	3	2	3									2	2	2	
C404	2.6	1.5	2.3								2	1.5	2	2	

Subject Code: 17CS754

Subject: Storage Area Network

Course Outcomes

C405.1	Identify key challenges in managing information and analyze different storage networking technologies and virtualization
C405.2	Explain components and the implementation of NAS
C405.3	Describe CAS architecture and types of archives and forms of virtualization
C405.4	Illustrate the storage infrastructure and management activities
C405.5	Analyze the components of cloud computing showing how business agility in an organization can be created

CO-PO-PSO Mapping

COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C405.1	2	2	2						1			1		2		
C405.2				2								1		1		
C405.3					2							1		2		
C405.4														2		
C405.5						1	1	1						2		
C405	2	2	2	2	2	1	1	1	1			1	1	1.6		

Subject Code: 17CSL76

Subject: Machine Learning LAB

Course Outcomes

C406.1	Understand the implementation procedures for the machine learning algorithms.
C406.2	Design java/python programs for various machine learning algorithms
C406.3	Apply appropriate dataset to the machine learning algorithms.
C406.4	Identify and apply machine learning algorithms to solve real world problems

CO-PO-PSO Mapping

COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C406.1		2														
C406.2			3		3											
C406.3	1	2														
C406.4		3	3	1												
C406	1	2.33	3	1	3											

Subject Code: 17CSL77

Subject: WEB TECHNOLOGY WITH MINI PROJECT

Course Outcomes

C407.1	Design and develop static and dynamic web pages.
C407.2	Create and analyze client side programming,server side programming,active server pages.
C407.3	Establish database connectivity to web applications.

CO-PO-PSO Mapping

COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C407.1	2	1											2	2		
C407.2	2	1	2	1									2	2		

C407.3	2				2								2	2	
C407	2.0	1	2	1	2								2.0	2.0	

Subject: Project Work Phase-I + Project work Seminar												Subject Code:17ISP78			
Course Outcomes															
C408.1	Discover Potential research areas in the field of IT.														
C408.2	Conduct a Survey of Several available literature in the preferred field of study.														
C408.3	Compare and contrast the several existing solutions for research challenge.														
C408.4	Demonstrate an ability to work in teams and manage the conduct of the research study.														
C408.5	Formulate and purpose a plan for creating a solution for the research plan identified and to report and present the findings of the study conducted in the preferred domain.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C408.1	3	2	2	2							2	2	2		
C408.2	2	3	2	1	1						1	1	2		
C408.3	3	3	3	1	2						2	1	3		
C408.4	2	2	3								1	1	2		
C408.5	2	3	3	1							2	2	2		
C408	2.4	2.6	2.6	1.25	1.5						1.6	1.4	2.2		

Semester-VIII

Subject: INTERNET OF THINGS AND APPLICATIONS												Subject Code: 17CS81			
Course Outcomes															
C409.1	Interpret the impact and challenges posed by IoT networks leading to new architectural models														
C409.2	Compare and contrast the deployment of smart objects and the technologies to connect them to network.														
C409.3	Discuss the role of IoT protocols for efficient network communication														
C409.4	Understand the need for Data Analytics and Security in IoT.														
C409.5	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C409.1	3	2	2	2	1								2		
C409.2	2	2		2									3		
C409.3	1	3	3	1									3		
C409.4	1	2	2	1	2								2		
C409.5	2	1	3	2									2		

C409	1.8	2	2.5	1.6	1.5									2.4		
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Subject: BIG DATA ANALYTICS												Subject Code: 17CS82				
Course Outcomes																
C410.1	Illustrate the concept of HDFS and Map Reduce Framework															
C410.2	Investigate Hadoop related tools for Big Data Analytics and perform Basic Hadoop administration.															
C410.3	Recognise the role of business intelligence, data ware housing and visualization in decision making.															
C410.4	Infer the importance of core data mining techniques for data analytics															
C410.5	Compare and contrast text mining, web mining, naïve bayes, SVM and social network analysis.															

CO-PO-PSO Mapping																
COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C410.1		2			3											
C410.2			2		3							2	2	2		
C410.3		2														
C410.4		2											2			
C410.5			2		3								2			
C410		2	2		3								2	2	2	

Subject: USER INTERFACE DESIGN												Subject Code: 17CS832				
Course Outcomes																
C411.1	Characterize and differentiate the User Interface principles and design standards.															
C411.2	Design the menu creation and navigations.															
C411.3	Design the windows creation and analyze operations.															
C411.4	Analyze and Establish connection between various screen based controls.															

CO-PO-PSO Mapping																
COs	POs												PSOs			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
C411.1	2		2										2			
C411.2			3										2			
C411.3			3										2			
C411.4		3											2			
C411	2.0	3.0	2.77										2.0			

Subject: INTERNSHIP/ PROFESSIONAL PRACTICE												Subject Code: 17IS84				
Course Outcomes																
C412.1	Apply domain knowledge in proposing solution for IT problem.															
C412.2	Develop/implement the design with appropriate techniques, resources and contemporary tools and deliver solution with stipulated planning.															
C412.3	Make the graduates work in collaboration/multidisciplinary environment.															
C412.4	Construct an integrity and ethical behavior during preparation of Technical															

	document/Report/development of solution.														
C412.5	Discuss and make formal and informal communications with guide, make presentations and prepare technical document.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C412.1	3	2	3										3		
C412.2	2	2		3									2		
C412.3	1			2					2				1		
C412.4	2			2	2								2		
C412.5	2							2				2	1		
C412	2	2	3	2.33	2			2	2			2	1.8		

Subject: PROJECT WORK II												Subject Code: 17ISP85			
Course Outcomes															
C413.1	Discover Potential research areas in the field of IT.														
C413.2	Conduct a Survey of Several available literature in the preferred field of study.														
C413.3	Compare and contrast the several existing solutions for research challenge.														
C413.4	Demonstrate an ability to work in teams and manage the conduct of the research study.														
C413.5	Formulate and purpose a plan for creating a solution for the research plan identified and to report and present the findings of the study conducted in the preferred domain.														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C413.1	3	2	2	2							2	2	2		
C413.2	2	3	2	1	1						1	1	2		
C413.3	3	3	3	1	2						2	1	3		
C413.4	2	2	3								1	1	2		
C413.5	2	3	3	1							2	2	2		
C413	2.4	2.6	2.6	1.25	1.5						1.6	1.4	2.2		

Subject: TECHNICAL SEMINAR												Subject Code: 17ISS86			
Course Outcomes															
C414.1	Identify and Analyze information about emerging technologies with respect to current trends.														
C414.2	Identify promising new directions of various cutting edge technologies with intrapersonal skills.														
C414.3	Communicate effectively to a diverse audience, exhibit effective communication skills.														
C414.4	Understand appropriate modern engineering and IT Tools in new innovations and inventions.														
C414.5	Develop technique by imparting skills in preparing detailed report and describing the topic along with results.														
CO-PO-PSO Mapping															

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C414.1	1	2		1					2			3	2		
C414.2	1	2		1					2			3	2		
C414.3	1	2		1					2	3		3	2		
C414.4	1	2		1					2			3	2		
C414.5	1	2		1					2			3	2		
C414	1	2		1					2	3		3	2		



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