Sri AdichunchanagiriShikshana Trust (R)

SJB Institute of Technology

(Affiliated to Visvesvaraya Technological University, Belagavi& Approved by AICTE, New Delhi.)

Department of Information Science and Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix
Batch 2019-23
Semester-I/II

Subject: Programming in C & Data Structures	Subject Code: 18PCD13/23

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: 18CPL16/26

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	

Subject: Engineering Mathematics-III	Subject Code: 18MAT31

Course Outcomes

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 the 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. s
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 functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

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													
C201.2	3	2													
C201.3	3	2													
C201.4	3	2													
C201.5	3	2													
C201	3	2													

Subject: **Data Structures and Applications**	Subject Code:18CS32

Course Outcomes

C202.1	Able to understand fundamentals of C language and definition of data structures
C202.2	Analyze and demonstrate the stacks, queues operations and its applications
C202.3	Create data storage using linked lists concepts and demonstrate its applications
C202.4	Construct trees data structures and perform operations such as traversals, searching and expression evaluation.
C202.5	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
C202.1	2	2	2										1		
C202.2	2	2	2										2		
C202.3	3	2	3		2								3		
C202.4	2	2	3	2									2		
C202.5	1	2	3	3	2								2		
C202	2	2	2.6	2.5	2								2		

Subject: ANALOG AND DIGITAL ELECTRONICS	Subject Code: 18CS33

Course Outcomes

C203.1	Make use the BJTs, Operational Amplifier circuits and their applications, ADC, DAC circuitswith its characteristics in the circuit configuration.
C203.2	Implement the expressions in Combinational Logic circuit, Simplification Techniques using Karnaugh Maps, QuineMcClusky technique and Petricks Method.
C203.3	Analyzing and discuss Operation of Decoders, Encoders, Multiplexers, Adders and Subtractors.

CO		
C203.4	Demonstrate the Latches, Flip-Flops for designing Registers in different scenarios in digital circuits	
C203.5	Recognize the various complicated issues in respect of performance of Synchronous and Asynchronous counters in Sequential Circuits and design of State Table and graph.	

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	3	2									1		
C203.2	2	3		2									2		
C203.3	1		2	1									2		
C203.4	2		2	2	1								2		
C203.5	1	2		2	1								2		
C203	1.6	2.3	2.3	1.8	1								1.8		

Subject: COMPUTER ORGANIZATION	Subject Code:18CS34

Course Outcomes

C204.1	Learn basic organization of computer system.
C204.2	Analyze different ways of communication between processor and I/O devices.
C204.3	Design basic memory chip and demonstrate functioning of memory system.
C204.4	Analyze simple arithmetic and logical units
C204.5	Examine Hardwired control and micro program control 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	3											2		
C204.2	3	3											2		
C204.3	2	2	2										2		
C204.4	3	3	3										2		
C204.5	2	1											2		
C204	2.6	2.4	2.5										2		

Subject: SOFTWARE ENGINEERING	Subject Code:18CS35

Course Outcomes

C205.1	Designa software system, component, or process to meet desired needs within realistic constraints.
C205.2	Assess professional and ethical responsibility.
C205.3	Function on multi-disciplinary teams.
C205.4	Using the techniques, skills, and modern engineering tools necessary for engineering practice.
C205.5	Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems.

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	2	1	2		1	2			2	1	2	2		
C205.2	2	2	1	2		2	1	3		1		1	1	1	
C205.3	2	2	3	2		1	2	1		1		1	2		
C205.4	2	1	2	1	1	2	1			1			2		
C205.5	3	2	1	3		1	2	1		1	2	2	1		
C205	2.4	2	1.6	2	1	1.4	1.6	1.6		1.2	1.5	1.5	1.6	1	

Subject: Discrete Mathematical Structures	Subject Code:18CS36

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 ELECTRONICSLABORATORY	Subject Code:18CSL37

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	Rate yourself in Design and demonstrate various combinational logic circuits & sequential 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 Code converter, Adder and Subtractor.

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		2				1				2	1	
C207.2	1		3										2		
C207.3	2		2		1				2				2	1	
C207.4	1	3	1		2								2	2	
C207.5	2		2		1								2		
C207	1.4	3	2.2		1.5				1.5				2	1.33	

Subject: Data Structures Laboratory	Subject Code:18CSL38

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	2	3	3	3									2		
C208.3	2	2	3	3									2		
C208	1.6	2.5	3	3									1.75		

Subject: Engineering Mathematics-IV	Subject Code: 18MAT41

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 continous probability distributions in analysing 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: Design and analysis of Algorithms	Subject Code:18CS42

Course Outcomes

C210.1	Analyze and compare the running time of algorithms using asymptotic analysis
C210.2	Able to describe and apply the method of divide-and-conquer and decrease-and-conquer strategies
C210.3	Describe and apply and the dynamic programming and greedy strategy paradigm
C210.4	Describe and apply backtracking and branch-and-bound approaches.
C210.5	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
C210.1	2	3	3	2									2		
C210.2	2	3	3	3	2								3		
C210.3	2	3	3	3	2								2		
C210.4	2	3	2	3	2								3		
C210.5	2	3	3	2	2								2		
C210	2	3	2.8	2.6	2								2.4		

Subject: Operating Systems	Subject Code:18CS43

Course Outcomes

C211.1	Demonstrate need for OS and different types of OS
C211.2	Apply suitable techniques for management of different resources
C211.3	Analyze Deadlock characteristics and provide solution to deadlocks, process synchronization & monitors.
C211.4	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
C211.1	3	2											2		
C211.2	3	3	2										2		
C211.3	2	3	3										2		
C211.4	2	3	3										2		
C211	2.5	2.75	2.66										2.0		

Subject: Microcontroller and Embedded Systems	Subject Code:18CS44

Course Outcomes

C212.1	Apply the architectural features and instructions of ARM microcontroller, by gaining the knowledge and programming ARM for different applications.
C212.2	Examine the various Interfaces with external devices and I/O instructions with ARM microcontroller.
C212.3	Interpret the basic hardware components based on the characteristics and attributes of an embedded system with firmware design approaches.
C212.4	Demonstrate the need of real time operating system for embedded system applications.

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		
C212.2		3	3	2	2								2		
C212.3	2	3	3										2		
C212.4	2	3	3										2		
C212	2.333	2.75	3	2	2								2		

Subject: Object Oriented Concepts	Subject Code:18CS45

Course Outcomes

C213.1	Explain the object-oriented concepts using C++ and JAVA
C213.2	Develop computer programs to solve real world problems in C++.
C213.3	Develop computer programs to solve real world problems by using multithreading and exception handling, event handling in Java.
C213.4	Develop simple GUI interfaces for a computer program to interact with users, and to understand 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
C213.1	2	3	3	2									2		
C213.2	3	3	3	2	2								2		
C213.3	2	3	3	3	2	2							2		
C213.4	3	3	3	3	2								2		
C213	2.5	3	3	2.5	2	2							2		

Subject: Data Communication	Subject Code:18CS46

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:18CSL47

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: Microcontroller and Embedded Systems Laboratory	Subject Code:18CSL48

Course Outcomes

C216.1	Write and test the mathematical programs on LPC 2148 through ARM instruction set.
C216.2	Examine the experiments on LPC 2148 evaluation board using embedded C and keilμvision 4.
C216.3	Analyze the experiments by interfacing the hardware components using ARM instruction set.

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	2			2		
C216.2			3		2				2				2		
C216.3	3		2						2	2			2		
C216	3		2.333		2				2	2			2		

Semester-V

Subject: M&E for IT Industry	Subject Code: 18CS51

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 and Security		Subject Code: 18CS52

Course Outcomes

C302.1	Examine the principles of application layer protocols.
C302.2	Recognize transport layer services and infer UDP, TCP protocols.
C302.3	Analyze router functionality, IP addressing and routing algorithms in network layer.
C302.4	Explore various network security algorithms and analyze.
C302.5	Examine and analyze multimedia networking concepts.

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		
C302.2			2		3								3		
C302.3		2											2		
C302.4				3									2		
C302.5					3								3		
C302	2.0	2.0	2.0	3.0	3.0	3.0							2.4		

Subject: Data Base Management Systems		Subject Code:18CS53

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
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: 18CS54

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: Application Development using Python	Subject Code: 18CS55

Course Outcomes

C305.1	Apply Python syntax and semantics, flow control, functions, strings, files and object oriented concepts to build applications.
C305.2	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions
C305.3	Develop exemplary applications related to Web scraping, Documents and JSON in Python.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C305.1	2														
C305.2		2													
C305.3			2	2	2							1		2	
C305	2	2	2	2	2							1		2	

Subject: Unix Programming	Subject Code:18CS56

Course Outcomes

C306.1	Explain Unix Architecture, file system and Basic commands
C306.2	Illustrate shell programming and write shell scripts
C306.3	Categorize, compare and make use of Unix system calls
C306.4	Build an application/service over a Unix 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	1	1													
C306.2	1		2		2								1		
C306.3	1	1	1										1		
C306.4			2		2				1				1		
C306	1	1	1.667		2				1				1		

Subject: COMPUTER NETWORKS LABORATORY	Subject Code: 18CSL57

Course Outcomes

C307.1	Analyze and compare various networking algorithms to secure data.
C307.2	Demonstrate the concepts of client server communications through socket programming.
C307.3	Analyze the different parameters of network configuration.
C307.4	Analyze transport layer protocols to evaluate congestion in network.
C307.5	Demonstrate the performance of CDMA and GSM using NS2/NS3.
C307.6	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
C307.1	2	3											1		
C307.2	2			2									2		
C307.3		3	2	2									2		
C307.4		3	2	2									2		
C307.5		2			2								2		
C307.6		2			2								2		
C307	2.0	2.2	2.0	2.0	2.0								1.83		

Subject: **Data Base Management Systems Lab**	Subject Code:**18CSL58**

Course Outcomes

C308.1	Infer database language commands to create simple database
C308.2	Analyze the database using queries to retrieve records
C308.3	Apply pl/sql for processing database
C308.4	Analyze front ends tools to design forms, report and menus.
C308.5	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
C308.1	3	3			3										
C308.2	2	3		2	3	2									
C308.3	2	2			2	2		3							
C308.4	2	2	2	2	2	2									
C308.5	3	2	2	3	3	2									
C308	2.5	2.5	2	2.5	2.6	2		3							

Semester-VI

Subject: FILE STRUCTURES	Subject Code:18IS61

Course Outcomes

C309.1	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.
C309.2	Illustrate management of records and organization of files for performance by applying object-oriented concepts
C309.3	Compare primary and secondary indexing and construct model for implementing consequential processing and sorting large files.
C309.4	Construct B-trees and illustrate indexed sequential access and prefix B+ trees with appropriate data structures.
C309.5	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
C309.1	1												2		
C309.2			1										2		
C309.3		3	3										2		
C309.4		3	3										2		
C309.5	1	3	3										2		
C309	1	3	2.5										2		

Subject: SOFTWARE TESTING	Subject Code: 18IS62

Course Outcomes

C310.1	Understanding basic terminologies of software testing methods
C310.2	Derive test cases for any given problem using black box and white box testing
C310.3	Understanding and apply different levels of testing
C310.4	Identify the needs of testing process framework
C310.5	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
C310.1	1	1											1		
C310.2		2	2										2		
C310.3	2			1	2								2		
C310.4	1	2											2		
C310.5									1	1	1		1		
C310	1.3	1.6	2	1	2				1	1	1		1.6		

Subject: WEB TECHNOLOGY AND ITS APPLICATIONS	Subject Code:18CS63

Course Outcomes

C311.1	Illustrate the Semantic Structure of HTML and CSS
C311.2	Compose forms and tables using HTML and CSS
C311.3	Design Client-Side programs using JavaScript and Server-Side programs using PHP
C311.4	Infer Object Oriented Programming capabilities of PHP
C311.5	Examine JavaScript frameworks such as jQuery, JSON, XML and Backbone

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C311.1	3		3												
C311.2		3	3	3											
C311.3		3	3									2		2	
C311.4	1	2	2	2									2		
C311.5			2										2	2	
C311	2	2.6	2.6	2.5								2	2	2	

Subject: Data mining and Data Warehousing	Subject Code: 18CS641

Course Outcomes

C312.1	**Understand** the basic concepts of data mining and data warehousing
C312.2	**Identify** datamining problems and implement the data warehouse
C312.3	**Write** association rules for a given data pattern
C312.4	**Describe** the classification and clustering techniques
C312.5	**Choose** between classification and clustering solution for a given problem

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C312.1	3												2		
C312.2		2													
C312.3			3						1						
C312.4		2	2			2						1			
C312.5	3	2										1			
C312	3	2	2.5			2			1			1	2		

Subject: CLOUD COMPUTING													Subject Code: 18CS643		

Course Outcomes

C313.1	Explore the concepts and terminologies of cloud computing
C313.2	Examine and understand Cloud framework and technologies
C313.3	Analyze data intensive computing
C313.4	Explore cloud applications

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C313.1	2	2											2		
C313.2	2	2	2		3								2		
C313.3	2		3		3								2		
C313.4	1	2	2		3								2		
C313	1.75	2	2.33	1	3								2		

Subject: Advance JAVA and J2EE													Subject Code:18CS644		

Course Outcomes

C314.1	Understand Java Concepts like enumerations and strings in developing modular programs
C314.2	Illustrate use of collection framework in developing modular programs.
C314.3	Understand string handling mechanism
C314.4	Develop web applications
C314.5	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
C314.1	1	1											1		
C314.2	2	1	1										1		
C314.3		2	1	1									1		
C314.4		2	2		2				2				2		
C314.5		2	2		2				2				2		
C314	1.5	1.6	1.5	1	2				2				1.4		

Subject: MOBILE APPLICATION DEVELOPMENT													Subject Code: 18CS651		

Course Outcomes

C315.1	Create, test and debug Android application by setting up Android development environment
C315.2	Implement adaptive, responsive user interfaces that work across a wide range of devices
C315.3	Demonstrate how to get internet connectivity, learning to manage tasks and sending notifications
C315.4	Demonstrating methods in storing, sharing and retrieving data in android applications.
C315.5	Analyze performance of android applications and understand the role of permissions and security and Publishing android application in real world

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		3		2				2	2			2		
C315.2	2		3		2				2				2		
C315.3	1		1		2				1				2		
C315.4	2		3		2				2	2			2		
C315.5	2	2	3	2	2								2		
C315	1	2	3	2	2								2	2	

Subject: PROGRAMMING IN JAVA													Subject Code: 18CS653		

Course Outcomes

C316.1	Explain the object-oriented concepts using C++ and JAVA
C316.2	Develop computer programs to solve real world problems in C++.
C316.3	Develop computer programs to solve real world problems by using multithreading and exception handling, event handling in Java.
C316.4	Develop simple GUI interfaces for a computer program to interact with users, and to understand 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
C316.1	2	3	3	2											
C316.2	3	3	3	2	2										
C316.3	2	3	3	3	2	2									
C316.4	3	3	3	3	2										
C316.1	2.2	2.2	2.2	2.2	2.3	2.0									

Subject: SOFTWARE TESTING LABORATORY	Subject Code:18ISL66

Course Outcomes

C317.1	List out the requirements for the given problem
C317.2	Design and implement the solution for given problem in any programming language
C317.3	Apply the appropriate technique for the design test cases
C317.4	Derive test cases for any given problem
C317.5	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
C317.1	1	2											1		
C317.2		2	3	2									2		
C317.3			3	1									2		
C317.4		1	2	1									2		
C317.5									1	1	1		1		
C317	1	1.6	2.6	1.3					1	1	1		1.6		

Subject: File Structures Laboratory with mini project	Subject Code:18ISL67

Course Outcomes

C318.1	Implement different data organization and manipulation techniques on files
C318.2	Design and develop indexing and consequential processing for data management in file
C318.3	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
C318.1		1	2		2								2		
C318.2		1	2		2								2		
C318.3		1	2		2				2	2	1	1	2		
C318		1	2		2				2	2	1	1	2		

Subject: Mobile Application Development	Subject Code:18CSMP68

Course Outcomes

C319.1	Create, test and debug Android application by setting up Android development environment.
C319.2	Implement adaptive, responsive user interfaces that work across a wide range of devices.

| C319.3 | Demonstrate methods in storing, sharing and retrieving data in Android applications. |
| C319.4 | Infer the role of permissions and security for Android applications. |

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
C319.1	3	2	2		2	1			1	1		1			
C319.2	3	2	2		2	1			1	1		1			
C319.3	3	2	2		2	1			1	1		1			
C319.4	3	2	2					2	1	1		1			
C319	3	2	2		2	1		2	1	1		1			

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