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	
CO-1	Achieve knowledge, with respect to the development of C problem solving skills.
CO-2	Understanding and analyzing basic principles of programming in C language
CO-3	Design and development of various programming skills
CO-4	Effective utilization of memory using pointer techniques.
CO-5	Understand the basic concepts of pointer and data structures

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3		1									1	1		
CO2	1	2											2		
CO3	1		2										1	1	
CO4	1	2													
CO5	3	1										1			
Average	1.8	1.66	1.5									1	1.66	1	

Subject: Computer Programming Laboratory	Subject Code: 17CPL16/26
Course Outcomes	
CO-1	Gaining knowledge on various parts of computer
CO-2	Analyzing problems through Drawing flowcharts and writing algorithms
CO-3	Design and development of C problem solving skills

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												2		2
CO2	1	2	1										1		1
CO3		2	2						1	1		2		2	
Average	2	2	1.5						1	1		2	1.5	2	1.5

Semester-III

Subject: Engineering Mathematics-III	Subject Code: 15MAT31
Course Outcomes	
CO1	Know the use of periodic signals and Fourier series to analyze circuits and systems communication.
CO2	Explain the general linear system theory for continous - time signals and digital signal processing using the Fourier transform and z-transform.
CO3	Employ appropriate numerical methods to solve algebraic and transcedental equations.
	Apply Green's theorem, Divergence theorem and Stokes theorem in various applications in the

CO5	Determine the extermals 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
CO1	3	2													
CO2	3	2													
CO3	3	2													
CO4	3	2													
CO5	3	2													
Average	3	2													

Subject: Analog and Digital Electronics	**Subject Code:**17CS32

Course Outcomes

CO-1	Acquire the knowledge and analyze the performance of Analog Electronic circuits like FET's, Operational amplifier circuits.
CO-2	Simplification of logical Expression of digital circuits using Karnaugh Map and Quine-McClusky Methods.
CO-3	Analyze the combinational Circuits and Construct the different Data Processing circuits like Multiplexers, Decoders, Tri state Buffers and Programmable Logic Devices.
CO-4	Understand and compare various Flip-Flops and applying the same in developing Registers.
CO-5	Design different types of counters and understanding the concept of ADC, DAC blocks required for data Conversion.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	1										2		
CO2	2	3											1	1	
CO3	1	2	1										1	1	
CO4	2	2	2			1							2	1	1
CO5	2		2										1	1	
Average	1.8	1.8	1.5			1							1.4	1	1

Subject: Data Structures and Applications	**Subject Code:**17CS33

Course Outcomes

CO-1	Apply the knowledge of fundamentals of C language and definition of data structure
CO-2	Analyze and demonstrate the stacks, queues operations and its applications
CO-3	Create data storage using linked lists concepts and demonstrate its applications
CO-4	Construct trees data structures and perform operations such as traversals, searching and expression evaluation.
CO-5	Use graph based data structure 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
CO1	3												3		
CO2		2									2				
CO3			3								2				
CO4			2												
CO5				2											

Average	3	2	1.5	2							2		3		

Subject: Computer Organization	**Subject Code:** 17CS34

Course Outcomes

CO-1	Explain the basic organization of a computer system and acquire the knowledge of machine instructions and memory operations.
CO-2	Illustrate the importance of Interrupts, bus arbitration and bus interface in accessing the I/O devices.
CO-3	Explain and compare different memory subsystem and memory mapping techniques.
CO-4	Analyze and evaluate the simple arithmetic and logical units.
CO-5	Illustrate the hardwired control and micro programmed control, Basics of Pipelining.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												2		
CO2	2	1											1		
CO3	2	2	1										1		
CO4	3	3	1										2		
CO5	2	2	1												
Average	2.4	2	1										1.5		

Subject: Unix System Programming	**Subject Code:** 17CS35

Course Outcomes

CO-1	Understand multi user unixos and its basic features and variation
CO-2	Interpret unix commands shell basics and shell environments using interpretive manner
CO-3	Design and develop shell programming using filters, communication, system calls and terminologies
CO-4	Design and develop unix file IO unix processes and awk programming
CO-5	Writing perl scripts for simple programs

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												3		
CO2	3	2											2		
CO3		2	2										3	2	
CO4	2		2											2	
CO5		2	2											2	2
Average	2.6	2	2										2.6	2	2

Subject: Discrete Mathematical Structures	**Subject Code:** 17CS36

Course Outcomes

CO-1	Verify the correctness of an argument using propositional and predicate logic and truth tables.
CO-2	Demonstrate the ability to solve problems using counting techniques and combinatorics in the context of discrete probability.
CO-3	Solve problems involving recurrence relations and generating functions
CO-4	Construct proofs using direct proof, proof by contraposition, proof by contradiction, and proof by cases, and mathematical induction.
CO-5	Explain, differentiate graphs and trees and construct optimal solution

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	1	2	2										1		
CO2	2	2	2										2	1	

CO3	3		3											1	
CO4	3	3	2									1		1	1
CO5		2	3	2								2	2	1	1
Average	2.25	2.25	2.4	2								1.5	1.6	1	1

Subject: Analog Digital Electronics Lab	Subject Code: 17CSL37
Course Outcomes	
CO-1	Design and demonstrate the various analog electronic application circuits using Opamp and Multivibrator IC and verify its working by simulate them.
CO-2	Construct and Demonstrate basic Digital circuits and Simulating to verify its functionalities by developing verilog Code.
CO-3	Apply the design Procedures to Develop and Demonstrate the Basic Digital Circuits and Simulating to verify its functionalities by developing verilog Code.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	1	2		2	2				1				1		1
CO2	1	1		2	2				1				1		1
CO3	1	2		2	2				1				1		1
Average	1	1.6		2	2				1				1		1

Subject: Data Structures Laboratory	Subject Code: 17CSL38
Course Outcomes	
CO-1	Able to implement linear and nonlinear data structures and understand its applications
CO-2	Create and analyze searching and sorting algorithms in data structures.
CO-3	Demonstrate data structure for solving 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
CO1		2												2	
CO2			2											2	
CO3		2	2											2	
Average		2	2											2	

Semester-IV

Subject: Engineering Mathematics-IV	Subject Code: 17MAT41
Course Outcomes	
CO-1	Solve first and second order ordinary differential equations arising in flow problems using single step and multistep numerical methods.
CO-2	Solve problems of Quantum, mechanics employing Bessel's function relating to cylindrical polar coordinate systems and Legendre's polynomials relating to spherical polar coordinate systems.
CO-3	Understand the analyticity, potential fields, residues and poles of the complex potential in the field theory and electromagnetic theory.Describe conformal and bilinear tranformation arising in aerofoil theory, fluid flow visualisation and image processing.
CO-4	Solve problems on probability distributions relating to digital signal processing.Determine joint probability distributions and stochastic matrix connected with the multivariable correlation problems for feasible random events.
CO-5	Draw the validity of the hypothesis processed for the given sampling distribution in accepting or rejecting the hypothesis.Define transition probability matrix of a Markov chain and solve problems related to discrete parameter random process.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2													
CO2	3	2													
CO3	3	2													
CO4	3	2													
CO5	3	2													
Average	3	2													

Subject: Object Oriented Concepts	Subject Code: 17CS42
Course Outcomes	
CO-1	Understand the object oriented concepts using c++
CO-2	Demonstrate the fundamentals of java and working of java development kit
CO-3	Understand object oriented concepts like class,inheritance,exception handling, packages and interfaces in java
CO-4	Interpret exception handling and demonstrate multithreading in java
CO-5	Develop simple GUI and handling events using applets and strings

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3		1										2	2	1
CO2	1		2		3									2	
CO3	3	2	2									1	2	2	
CO4			2										1	2	
CO5			3		2								2	2	
Average	2.33	2	2		2.5							1	1.75	2	1

Subject: Design and Analysis of Algorithms	Subject Code: 17CS43
Course Outcomes	
CO-1	Understand the basics of algorithm, methods for analyzing algorithm and also expressing the boumndaries of efficiencies using aymptotic notations
CO-2	Describe the method of divide and conquer and when to use such algorithms
CO-3	Describe dynamic propgramming paradigm and explain when an algorithm design situation calls for it
CO-4	Describe Backtracking and branch and bound approaches
CO-5	Analyze different classes of algorithms such as P,NP and NP hard

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											2		2
CO2	3	3	3										2		2
CO3	3	3	3										2		2
CO4	3	2	3										2		2
CO5	2												2		2
Average	2.8	2.5	3										2		2

Subject: MICROPROCESSOR AND MICROCONTROLLERS	Subject Code: 17CS44
Course Outcomes	
CO-1	Study the history and Describe the Architecture of 8086 Microprocessor.
CO-2	Understand the Instruction set of 8086 and Develop the Assembly Language programs using Instruction

	Set , Software Interrupts and Sub Routines.
CO-3	Apply the knowledge of 8086 assembly Programming and Interrupts for Interfacing hardware devices.
CO-4	Describe the Architectural Features, Fundamentals of ARM based Systems.
CO-5	Understand the ARM Instruction set and illustrate the simple Assembly Programs.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2												2		
CO2	2	2	1											2	
CO3	1	2	2											2	
CO4	2												1		
CO5	1	2											1		
Average	1.6	2	1.5										1.3	2	

Subject: Software Engineering	**Subject Code:**17CS45

Course Outcomes

CO-1	Design a software system, component, or process to meet desired needs within realistic constraints.
CO-2	Assess professional and ethical responsibility
CO-3	Function on multi-disciplinary teams
CO-4	Use the techniques, skills, and modern engineering tools necessary for engineering practice
CO-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
CO1	3	2											2		
CO2						2		2							3
CO3									2		2			2	
CO4	2				1										2
CO5	2	2											1		2
Average	2.33	2			1	2		2	2		2		1.5	2	2.33

Subject: Data Communication	**Subject Code:**17CS46

Course Outcomes

CO-1	Define and illustrate basic computer network technology, data transmission techniques and wireless network
CO-2	Explain the different types of data transmission techniques
CO-3	Explain the switching error detection techniques
CO-4	Explain the data link layer concepts, subnetting
CO-5	Explain different network standards

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2												2		
CO2	2	2											2		
CO3	2	2										2	1		1
CO4	2	2											1		1
CO5	2	2										2	1		1
Average	2	2										2	1.4		1

Subject: Design and Analysis of Algorithm Lab	**Subject Code:**17CSL47

Course Outcomes	
CO-1	Write programs in java to solve Various problems.
CO-2	Implement Quicksort, Merge sort , and Dynamic algorithm
CO-3	Implement Backtracking algorithms for the sum of subset and Hamiltonian cycle, greedy algorithm, for Knapsack prims and kruskal's

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2			1								2	2	2
CO2	2	2			1								2	2	2
CO3	2	2			1								2	2	2
Average	2	2			1								2	2	2

Subject: Microprocessor and Microcontroller Lab	Subject Code: 17CSL48

Course Outcomes	
CO-1	Gain the knowledge of how Assembly Language works, Design and Implement the the programs in 8086 Assembly Language
CO-2	Develop the 8086 Hardware programs and Demostrate them by Interfacing the hardware Devices
CO-3	Develop the assembly language /C Programs for Arithmatic , Logical/Data Tranfer operations and Demonstrate the ARM Programs by Interface the LCD and Stepper motor to LPC 2148

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1		2													
CO2				1											
CO3		2											2		
Average		2		1									2		

Semester-V

Subject: Management and Entrepreneurship	Subject Code: 17CS51

Course Outcomes	
CO-1	Define the management, organization, entrepreneur , planning ,staffing ,ERP.
CO-2	outline the importance of directing leadership styles, controlling and communication
CO-3	Describe the quality and characteristics of entrepreneurs.
CO-4	Utilize the resources available effectively through ERP.
CO-5	Make use of IPR's and institutional support in entrepreneurship and Appraise the importance of Entrepreneurs 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
CO1	3					1			1		2	1			2
CO2	2							1	3	2	2	1			2
CO3	2					3	2	3	2	2	2	1			3
CO4	2					1	2	1	1	2		1			2
CO5	2					1	2	1	2	2	3	2			2
Average	2.2					1.5	2	1.5	1.8	2	2.25	1.5			2.2

Subject: Computer Networks	Subject Code: 17CS52

Course Outcomes	
CO-1	Demonstration of Application layer protocols.

CO-2	Recognize transport layer services and infer UDP/TCP protocols.
CO-3	Identify and classify the routers and apply Routing algorithms in Network layer.
CO-4	Disseminate the wireless and mobile networks covering IEEE 802.11 standard.
CO-5	Describe multimedia networking and network management.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1											2		
CO2	2	1												1	
CO3	2	2				1						1		1	1
CO4	1					1						1	1		1
CO5	1					1						1	1		1
Average	1.8	1.33				1						1	1.33	1	1

Subject: Database mangement system	**Subject Code:**17CS53

Course Outcomes

CO-1	Inculcate basic concepts, applications & architecture of Database Management System.
CO-2	Apply design principles & represent the description of Database using ER diagram and gain knowledge on relational Database theory.
CO-3	Construct Queries using Relational Algebra expressions and SQL on commercial relational database system(Oracle) and Illustrate to tune the Database design using normalization techniques
CO-4	Learn basic issues of transaction processing and concurrency control recovery
CO-5	Design and develop any database application system successfully.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												3		2
CO2	3	2	2										3		2
CO3	3	2	1		2								2	2	2
CO4	3												3		2
CO5	1	2	3										3	3	3
Average	2.6	2	2		2								2.8	2.5	2.2

Subject: Automata Theory and Computability	**Subject Code:**17CS54

Course Outcomes

CO-1	Demonstrate knowledge of basic mathematical models of computation and describe how they relate to formal languages
CO-2	Formulate the problems in terms of Regular expression and context free grammar for language recognizes
CO-3	Analyze the strengths and weaknesses of Computational Models
CO-4	Design a automata(Abstract machine) to recognize the languages
CO-5	Solve 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
CO1	3	2											1		
CO2		2	2										2		
CO3		1	3										2		
CO4		3	1										2		
CO5		2	2										2		
Average	3	2	2										1.8		

Subject: Advanced Java and J2EE | **Subject Code:** 17CS553

Course Outcomes

CO-1	Understand and Apply enumeration and autoboxing concepts in managing the data in objects
CO-2	understand and Apply collection concepts to store, access, remove, sort the data
CO-3	Understand, apply and create a solution for string pattern matching, searching and extracting
CO-4	Understand, apply and create a web interface using JSP concepts and learn to deploy the web application to app server.
CO-5	Understand, apply and create a solution to manage the back-end data base using JDBC concepts

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2												2		
CO2		2	2										2	2	
CO3	3	2	2											2	
CO4	2		2		2		1							1	2
CO5	2		2		2	1							2	2	1
Average	2.25	2	2		2	1	1						2	1.7	1.5

Subject: Artificial Intelligence | **Subject Code:** 17CS562

Course Outcomes

CO-1	Understand the problem where A I is needed and solving using Heuristic search approaches
CO-2	Analaysis the Issues in representing the knowledge and deriving the rules to represent the knowledge
CO-3	Understand and analyse the different AI technique to solve problems
CO-4	Define learning techniques and compare learning techniques
CO-5	Discuss on natural language processing and Expert systems

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2											2		
CO2		3	2	2									2		
CO3	2	3	2	1		1						2		2	
CO4	2	2		1								2	2	2	2
CO5	2	2	1									2	2		2
Average	2	2.4	1.6	1.3		1						2	2	2	2

Subject: DOT NET APPLICATION | **Subject Code:** 17CS564

Course Outcomes

CO-1	Build applications on Visual Studio .NET platform by understanding the syntax and semantics of C#.
CO-2	Demonstrate Object Oriented Programming concepts in C# programming language.
CO-3	Design custom interfaces for applications and leverage the available built-in interfaces in building complex applications.
CO-4	Illustrate the use of generics and collections in C#
CO-5	Compose queries to query in-memory data and define own operator behavior

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1		2											2		
CO2		2											2		
CO3		2	3											2	
CO4	2													2	
CO5		2		2										2	

Average	2	2	3	2									2	2	

Subject: Computer Networks Lab													Subject Code: 17CSL57		
Course Outcomes															
CO-1	Analyze and Compare various networking protocols, security and error checking mechanisms.														
CO-2	Demonstrate the working of different concepts of computer networking														
CO-3	Analyze ,implement and evaluate networking protocols 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
CO1		2													
CO2				1											
CO3		2											2		
Average		2		1									2		

Subject: DBA Lab with mini project													Subject Code: 15CSL58		
Course Outcomes															
CO-1	Create,update and query on the database														
CO-2	Demonstrate the working of different concepts of DBMS														
CO-3	implement,analyze and evaluate the project developed for an application														
CO-PO-PSO Mapping															
COs	**POs**												**PSOs**		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3				2								3	1	3
CO2	2				2								3	1	2
CO3	1	2	3		3	1			2	1	2	2	2	2	3
Average	2	2	3		2.3	1			2	1	2	2	2.6	1.3	2.6

Semester-VI

Subject: Cryptography Network Security and Cyber Law													Subject Code: 17CS61		
Course Outcomes															
CO-1	Discuss cryptography and its need to various applications														
CO-2	Design and develop simple cryptography algorithms.														
CO-3	Analyze different digital signature algorithm and key management techniques for secure communication														
CO-4	Compare and examine different protocols used in Wireless LAN														
CO-5	Understand cyber security and cyber Law needs.														
CO-PO-PSO Mapping															
COs	**POs**												**PSOs**		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1				1							1		
CO2	3	2				1							2	1	
CO3	2	2				2							2		
CO4	2	2		1		2							3		
CO5								3				2			2
Average	2.5	1.7		1		1.5		3				2	2	1	2

Subject: Computer Graphics &Visualziation	Subject Code: 17CS62

Course Outcomes

CO-1	Explain the Concepts of Computer Graphics and usage of open GL
CO-2	Illustrate geometric transformation and viewing functions on 2D objects
CO-3	Demonstrate the concepts of clipping, 3D transformations, color and illumination model
CO-4	Differentiate various projection and viewing techniques on 3D objects
CO-5	Demonstrate the use of various API for input interaction to develop GUI

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1			2								1		
CO2	3	2			2							1	1	1	1
CO3	3	2			2							1	1	1	2
CO4	2	2			2							2	1	1	2
CO5	3	1			2							2	2	1	2
Average	2.8	1.6			2							1.5	1.2	1	1.75

Subject: System Software and compiler design	Subject Code: 17CS63

Course Outcomes

CO-1	Apply the knowledge of System Software such as Assemblers, Loaders, Linkers and Macroprocessors to compare the architectures.
CO-2	Write object code for a given assembly level language program
CO-3	Apply the knowledge of compilers and develop lexical analyzers.
CO-4	Analyze the given grammar and design parser using different approach.
CO-5	Apply the knowledge of synthesis phase and analyze the correlation between syntax tree and code generation.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3														1
CO2		2	2										1		
CO3	3													1	1
CO4		2	2										3		2
CO5	3	2													1
Average	3	2	2										2	1	1.25

Subject: Operating Systems	Subject Code: 17CS64

Course Outcomes

CO-1	Demonstrate need for Operating System and different types of Operating System.
CO-2	Apply suitable techniques for Management of different resources.
CO-3	Use prosessor , memory ,storage and file system commands.
CO-4	Define deadlocks situation and solve deadlock scenarious in a operating system.
CO-5	Realize the different concepts of opertaing system 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
CO1	3												2	2	
CO2	2	2	1										2	2	
CO3	1	2	1										1	1	
CO4		2	2												
CO5	2		2												1

Average	2	2	1.5										1.66	1.6	1

Subject: Data mining data warehousing	Subject Code: 17CS651

Course Outcomes

CO-1	understand the basic concepts of data mining and datawarehousing
CO-2	Identify datamining Problems and implement the datawarehouse
CO-3	write association rules for a given data pattern
CO-4	describe the classification and clustering techniques
CO-5	choose between classification and clustering sloution 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
CO1	3												2		
CO2		2												2	
CO3			3						1					2	
CO4		2	2			2						1		2	2
CO5	3	2										1			3
Average	3	2	2.5			2			1			1	2	2	2.5

Subject: Python Application programming	Subject Code: 17CS664

Course Outcomes

CO-1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions
CO-2	Demonstrate proficiency in handling Strings and File Systems.
CO-3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions
CO-4	Interpret the concepts of Object-Oriented Programming as used in Python
CO-5	Implement 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
CO1	3												1		
CO2	2				1								2		
CO3		2			2								2		
CO4	2		2											1	1
CO5		2			2							2	2	1	
Average	2.3	2	2		1.6							2	1.7	1	1

Subject: System Software and Operating system lab	Subject Code: 17CSL67

Course Outcomes

CO-1	Implement and demonstrate lexers and parsers
CO-2	Implement and demonstrate top down, bottom up parsing and generation of intermediate code.
CO-3	Implement different algorithms required for memory management, processscheduling,resource allocation used in operating system

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2			2									2	
CO2		2	2										2		
CO3	2	2	2												
Average	2	2	2		2								2	2	

Subject: Computer Graphics with mini project	Subject Code: 17CSL68

Course Outcomes

CO-1	Illustrate the concepts of computer graphics and implement computer graphics application using open GL
CO-2	Develop and execute polygon filling,clipping,algorithms and animate curves using openGL
CO-3	Design and implement basic transformation and viewing functions on objects using opengl for 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
CO1	2	2	2		2							1	1		1
CO2	2	2	2		2							1		1	1
CO3	2	2	3		2				2	2	2	1		2	2
Average	2	2	2.3		2				2	2	2	1	1	1.5	1.3

Semester-VII

Subject: Web Technology And Its Applications	Subject Code: 17CS71

Course Outcomes

CO-1	Understand and Adapt HTML and CSS syntax and semantics to build web page
CO-2	Construct and visually format tables and forms using HTML and CSS
CO-3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.
CO-4	Appraise the principles of object oriented development using PHP
CO-5	Inspect JavaScript frameworks like j Query and Backbone which facilitates developer to focus on core features.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											2	2	
CO2	2	2	2										2	2	
CO3	2	2	2										2	2	
CO4	2	2											2		
CO5	2	2	2									2	2	2	2
Average	2.2	2	2									2	2	2	2

Subject: Advanced Computer Architecture	Subject Code: 17CS72

Course Outcomes

CO-1	Explain the concepts of parallel computing and network technologies
CO-2	Analyze the performance with respect to Power & cost.
CO-3	Illustrate parallel algorithm for parallel architecture.
CO-4	Understand the design issues relating to memory hierarchy and architecture.
CO-5	Understand the programming concepts in context of computer system design & organization.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1											2		
CO2	2	1											1		

CO3	2	1	1											1				
CO4	3	1												1	1			
CO5	2	1											1	1		1		
Average	2.4	1	1										1	1.2	1	1		

Subject: Machine Learning								Subject Code: 17CS73							
Course Outcomes															
CO-1	Understand the basic concepts of Machine learning and Its types														
CO-2	Identify optimal techniques suitable for a given problem														
CO-3	Illustrate learning algorithms														
CO-4	Apply machine learning technique towards real world data analysis														
CO-5	Design an application using machine learning methods														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3										1	2		2
CO2		2			2								2	2	
CO3	2												1		
CO4	2	2				2						2	2		1
CO5			3	1								1	1		2
Average	2.33	2.33	3	1	2	2						1.33	1.6	2	1.66

Subject: Information and Network Security								Subject Code: 17CS743							
Course Outcomes															
CO-1	Understand the fundamentals and history of cryptography.														
CO-2	Understand and Implement hash functions and applications of hash functions														
CO-3	Acquire knowledge on Random generation password schemes and analyzing the simple cryptographic protocols														
CO-4	Illustrate the need of key generation and management														
CO-5	Acquire basic knowledge of designing a security application to apply in the field of information technology														
CO-PO-PSO Mapping															
COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2												1		
CO2	1	2		1									2		
CO3	1	1	2										1		
CO4	1	2											2		
CO5		2				1			1			1	1		1
Average	1.25	1.75	2	1		1			1			1	1.4		1

Subject: Storage Area Networks		Subject Code: 17CS754
Course Outcomes		
CO-1	Identify key challenges in managing information along with RAID implementations.	
CO-2	Describe different storage networking technologies and virtualization.	
CO-3	Illustrate backup, archive and replication. Explain components and the implementations of NAS.	
CO-4	Determining different cloud computing deployment models, service models and infrastructure components.	
CO-5	Illustrate the storage infrastructure and management activities.	

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											2		
CO2	1	2	2									1			
CO3	2												2		2
CO4	2		2		1	1							1	1	2
CO5	1	2										2			2
Average	1.8	2	2		1	1						1.5	1.66	1	2

Subject: Machine Learning Laboratory | **Subject Code:** 17CSL76

Course Outcomes

CO-1	Explore various python libraries useful for real-time application and choose appropriate data sets to the Machine Learning algorithms.
CO-2	Understand the implementation procedures for the machine learning algorithms
CO-3	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
CO1	2	2	2										2		
CO2					2	1							2		
CO3	1	2	2									2	2	2	2
Average	1.5	2	2		2	1						2	2	2	2

Subject: Web Technology Laboratory With Mini Project | **Subject Code:** 17CSL77

Course Outcomes

CO-1	Understand and Adapt HTML and CSS syntax and semantics to Design and develop dynamic web pages with good aesthetic sense
CO-2	understanding of Web Application Terminologies, Internet Tools other web services
CO-3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically. Learn how to link and publish web sites

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	2										2	2	
CO2	2	2	2		2								2	2	
CO3	2	2	2	2	2	1			2	2	2	2	2	2	2
Average	2.33	2.33	2	2	2	1			2	2	2	2	2	2	2

Subject: Project Work Phase I | **Subject Code:** 17CSP78

Course Outcomes

CO-1	Gain knowledge on societal real time problems and identify innovation required
CO-2	Undertake identified problems statement in different domains
CO-3	Analyse the problem statement through literature survey
CO-4	Formulation of designing Process
CO-5	Knowing the functionality of team work / Individuals

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2											2	2		

CO2		2										1					
CO3		3										2	1				
CO4			1								2			1			
CO5									3			2					
Average	2	2.5	1						3		2	1.75	1.5	1			

Semester-VIII

Subject: Internet of Things & Its application	Subject Code:17CS81

Course Outcomes

CO-1	Interpret the impact and Challenges posed by IoT networks leading to new Architectural models
CO-2	Compare and Contrast the depoloyment of smart objects and the technologies to connect them to network
CO-3	Appraisie the role of IoT protocols for efficient network communication
CO-4	Elaborate the need of Data Analytics and its security in IoT
CO-5	Illustrate different sensor technologies for sensing real worl 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
CO1	3												1		
CO2	2	2											2		
CO3	2	2											1		
CO4		1				2							1		
CO5	2	2											2	1	
Average	2.25	1.75				2							1.4	1	

Subject: Big Data Analytics	Subject Code:17CS82

Course Outcomes

CO-1	Understand the concepts of HDFS and map reduce framework
CO-2	Investigate hadoop related tools for Big data Analytics and perform basic hadoop administration.
CO-3	Recognize the role of business Intelligence, data ware housing and visualization in decision making.
CO-4	Infer the importance of core data mining techniques for data analytics.
CO-5	Compare and contrast different text mining web mining, naïve bayes analysis, support vector machines 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
CO1	3	2											2		1
CO2	2	2			1								2	2	3
CO3	2											1	2		2
CO4	2	2	2			2							2		3
CO5	3	2	2									1	2		2
Average	2.4	2	2		1	2						1	2	2	2.2

Subject: System Modelling And Simulation	Subject Code:17CS834

Course Outcomes

CO-1	Identify the role of important elements of discrete even simulation and modeling paradigm in real world
CO-2	Describe the various distribution models and analyze various queuing models

CO-3	Examine and apply techniques for generating random numbers and random variants.
CO-4	Judge appropriate method for data collection and testing methods
CO-5	Sketch the model and apply the results to solve critical issues in a real world environment

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2										2	2		3
CO2	1	2		2							2			2	
CO3					1									3	
CO4			2				3						1		
CO5			3	2							3			2	
Average	2	2	2.5	2	1		3				2.5	2	1.5	2.33	3

Subject: Internship | **Subject Code:** 17CS84

Course Outcomes

CO-1	Identify and apply the problem using engineering knowledge
CO-2	Design and implement new concepts in multidisciplinary area.
CO-3	Explore career alternatives prior to graduation in different domains
CO-4	Demonstrate professional and ethical practice
CO-5	Gain more experience in accomplishing a long-term project, and managing the progress continuously.

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											2	1	
CO2			3						2	2				1	2
CO3		1	1						2			2			3
CO4			2					2						2	
CO5											2	2			2
Average	3	1.5	2					2	2	2	2	2	2	1.33	2.33

Subject: Project Work Phase II | **Subject Code:** 17CSP85

Course Outcomes

CO-1	Design engineering solution to complex problems utilizing a system approach using modern tools
CO-2	Communicate with peers, supervisor engineers and society
CO-3	Implement the innovative designed work and conduct performance analysis using engineering project principles.
CO-4	Demonstrate the work done and knowledge gained in completed work
CO-5	Demonstrated work presented in terms of Dissertation and / or Publications

CO-PO-PSO Mapping

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1			3		3	2						2	3	3	2
CO2								2	3	3		2		2	2
CO3		3		3							3	2	3	3	2
CO4							2		2	2	3	2		2	2
CO5								2	2	3	2	2			2
Average		3	3	3	3	2	2	2	2.33	2.66	2.66	2	3	2.5	2

Subject: Seminar | **Subject Code:** 17CSS86

Course Outcomes

CO-1	Identify and Analyze information about emerging technologies with respect to current trends.
CO-2	Identify promising new directions of various cutting edge technologies with intrapersonal skills.
CO-3	Communicate effectively to a diverse audience, exhibit effective communication skills.
CO-4	Students should discuss appropriate modern engineering and IT Tools in new innovations and inventions.
CO-5	Explain various techniques and skills used for preparing detailed report 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
CO1	2	2											2		
CO2	2	2											1		
CO3	2	2							2	3			2		
CO4	2	2			1								2		
CO5	2	2				1	2						2		
Average	**2**	**2**			**1**	**1**	**2**		**2**	**3**			**1.8**		

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