CO-PO, PSO Mapping

Course outcomes:

Object Oriented Programming Using Java (3rd Semester)

CO1: Knowledge of the structure and model of the Java programming language, (knowledge)
CO2: Use the Java programming language for various programming technologies (understanding)
CO3: Develop software in the Java programming language, (application)
CO4: Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
CO5: Propose the use of certain technologies by implementing them in the Java programming languageto solve the given problem (synthesis).
CO6: Choose an engineering approach to solving problems, starting from the acquired knowledge ofprogramming and knowledge of operating systems. (evaluation)

CO-PO Mapping											
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3										
CO2	2	2										
CO3			2			3						2
CO4		3			3							
CO5		2	3									
CO6	2			3								

Course outcomes:

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Data Structures Using 'C' (3rd Semester)

CO1: Analyse performance of algorithms and implement various operations on array and sparse matrix.
CO2: Apply the basic operations of stacks and queues to solve real world problems.
CO3: Implement different types of linked list operations and their applications.
CO4: Represent data using trees & graphs to use them in various real life applications.
CO5: Analyse various sorting algorithms and explore different hashing techniques.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3										
CO2	1		3									
CO3	3	2	2									
CO4	3		1									
CO5	2	3										

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
Computer Organization & Architecture(3rd Semester)

CO1: To draw the functional block diagram of single bus architecture of a computer.
CO2: To describe the function of the instruction execution cycle, RTL interpretation of

instructions, addressing modes, instruction set.
CO3: To know the design concept of Control unit and operation of ALU.
CO4: To Analyze cache performance, cache optimizations, memory technologies, Protectionvia virtual memory and virtual machine
CO5: To assess the performance of a given CPU organization, and apply design techniques to enhance performance using pipelining and parallelism.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2										
CO2	2	3	1									
CO3		2	3	1								
CO4	2	3										
CO5	2	3										

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:

Database Engineering (4th Semester)

CO1: Differentiate the database concepts from conventional file storage system and describe DBMSarchitecture, relational, hierarchical and network database models

CO2: Analyse application data using E-R modelling and describe the logical and physical database designs.

CO3: Understand relational algebra, calculus and apply structured query language (SQL) for databasedefinition and manipulation.

CO4: Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.

CO5: Use transaction management systems and recover methods.

CO-PO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3											
CO2	1	3	2									
CO3	3		2									
CO4	2		2									
CO5	2					2				1		

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	1
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	2	2
C303.5	2	2	1
Average CO	**2.4**	**1.40**	**1.20**

Course outcomes:
Design Algorithm and Analysis (4th Semester)

CO1: Analyse the asymptotic performance of algorithms
CO2: Understand different algorithm design techniques
CO3: Apply important algorithmic design paradigms and methods of analysis
CO4: Demonstrate familiarity with major algorithms and data structures
CO5: Evaluate different classes of problems: P, NP, NP Complete and NP Hard
CO6: Develop algorithms to apply in common engineering design situations

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2									
CO2	3	2	2									1
CO3	2	3	2									1
CO4	1	2	2									
CO5	1	1										
CO6	2	2	3									2

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	2
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	2	2
C303.5	2	2	1
Average CO	**2.4**	**1.40**	**1.20**

Course outcomes:

Advanced Computer Architecture(4th Semester)

CO1: Understand the cost, performance, Trends in Technology, power in Integrated Circuits and Principles of computer design.

CO2: Analyze the working of pipelining, exploring instruction level parallelism using static, dynamic & advanced techniques of scheduling and analyze the techniques to explore
Instruction level parallelism and reducing the cost & hazards using dynamic scheduling.

CO3: Analyze multiprocessors & thread level parallelism using shared, distributed and directory based memory models.

CO4: Analyze cache performance, cache optimizations, memory technologies, Protection via virtual memory and virtual machine.

CO5: Understand the networking and routing for parallel system with study of distributed computing and cloud computing architecture.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	3	2			2	1	1	1
CO2	3	3	2	2	2	1			2	1	1	
CO3	2	2	3	2	3					1		1
CO4	3	3	3	2	3				1	1	1	1
CO5	2	3	3	2	3	1			1	2	1	

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	3
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	2
Average CO	**2.4**	**1.35**	**2.0**

Course outcomes:
Data Communication and Computer Networks (4th Semester)

CO1: Analyse the concepts of networks, types and architectures
CO2: Explain various techniques and modes of transmission (Analog and Digital).
CO3: Identify error free transmission of data and analyse data collision with various protocols.
CO4: Describe IPv4 & IPv6 addressing schemes, subnets, routing principles and algorithms used in the network layer.
CO5: Explain the protocols of transport & application layers and understand the working principles of Internet & the World Wide Web.

CO-PO Mapping												
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	3	2									
CO2	3	2	2			2						
CO3	3	2	1			1						
CO4	3	1	2									1
CO5	3	2	1			1						1

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	1
C303.2	3	1	1
C303.3	3	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.6**	**1.35**	**1.20**

Course outcomes:

Operating Systems (5th Semester)

CO1: -Explain the types of operating system and ability to create threads.
CO2: - Understand CPU scheduling and perform interposes communication.
CO3: -Understand issues surrounding deadlock handling and able to solve process synchronization problems
CO4: - Explain paging and segmentation methods suitable for virtual memory.
CO5: - Be able to recover and manage disk spaces. Ability to manage files and directory Knowledge of files systems.

CO-PO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	1	1	1							
CO2	1	1	1	2							1	
CO3	1	2	3								1	
CO4	1	1		2	2							
CO5	1	2	2	2								

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
Formal Language & Automata Theory(5th Semester)

CO 1: Develop and implement mathematical models with DFA, NFA for regular languages and grammar for real life applications.
CO 2: Examine the properties of formal language and automata, their equivalence and conversiontechniques
CO 3: Classify and construct grammars for different languages and vice-versa.
CO 4: Construct Turing machines for context sensitive and un-restricted languages.
CO 5: Illustrate the relevance of the Church-Turing thesis, explain the concept of decidability & recursiveremunerability, and classify a given language to the P, NP or NPC complexity classes.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1							2
CO2	3	2	3	1	3							2
CO3	3	3	3	2	3							2
CO4	2	3	2	2								2
CO5	2	2	2	3								1

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
ADVANCED JAVA PROGRAMING(5th Semester)

CO1: Design a desktop application which can used for many kind of clients.
CO2: Develop an application which can also be connected with the database.
CO3: To learn Server-Side Programming using Servlets and Java Server Pages.
CO4: Design a web application which can work as a dynamic web with the help of JDBC.
CO5: To learn the operations perform on data among web applications.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	3	1	1	1			2			
CO2	2	2	3	2	1	1			2			
CO3	3	2	3	2	2	1			2			
CO4	2	1	3	2	3	2			2			2
CO5	2	3	3	3	3	3			3	1	1	3

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
Introduction to Machine Learning (5th Semester)

CO1 Apply supervised learning to solve related real-life problems.
CO2 Analyse a problem and select the most suitable supervised model for the same.
CO3 Apply classification & regression models such as SVM and decision models.
CO4 Preform clustering of given data with extraction of important features.
CO5 Apply the concepts of reinforcement learning to solve relevant real-life problems

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1								
CO2	2	3		2	1							
CO3	3		2									
CO4	2	1		2								
CO5	2	1	1	2								

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
Micro Processor and Micro Controller (5th Semester)

CO1: Explain the architecture, pins & signals, programming model, instruction execution of 8085Micro-processor and its interfacing with memory and I/O devices.
CO2: Explain the architecture, pins & signals, programming model, instruction execution of 8086Micro-processor and its interfacing with memory and I/O devices.
CO3: Explain the concepts of embedded ICs, RISC and CISC processors and 8051 Micro-controllers to solve simple problems using assembly language programming.
CO4: Design Micro-controller based interfacing for different applications.
CO5: Demonstrate peripheral interfacing with advanced programming of Micro-processors andMicro-controllers for real-time applications.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2									
CO2	3	2	2			2						
CO3	3	3	2									
CO4	2	3	3			1						1
CO5	2	3	3			1						1

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
Compiler Design (6th Semester)

CO1: Review different phases and passes of compiler and its underlying formal models such as finite state automata, and their connection to language definition through regular expressions and grammars.
CO2: Differentiate various parser construction techniques.
CO3: Able to use formal attributed grammars for specifying the syntax and semantics of programming languages and able to generate intermediate code generation.
CO4: Able to generate the code for the target machine.
CO5: Use code optimization techniques to improve the performance of a program in terms of speed &space.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2										2
CO2	1	2										
CO3	2	1	3								2	2
CO4	2	2	2								2	3
CO5	2	2	2									1

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
Software Engineering (6th Semester)

CO1: Describe fundamentals of software engineering and life cycle models and building of software products based on their characteristics.
CO2: Apply various requirement analysis tools for the requirement engineering process
CO3: Create high-level & detail-level design of a software using various design methodologies.
CO4: Code, review, test and maintain software products confirming to quality standards
CO5: Maintain software products confirming to quality standards

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1		2		1	2	1			
CO2	3	2	2		2		3	3	2			
CO3	2	3	2		2		2	2	2			
CO4	2	3	3		2		2	2	2			
CO5	2	3	3		2		1	2	1			

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	2
C303.2	3	2	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.45**	**1.40**

Course outcomes:
Internet Of Things (6th Semester)

CO1. Describe various layers of IoT protocol stack and describe protocol functionalities.
CO2. Evaluate efficiency trade-offs among alternative communication models for an efficient IoT application design.
CO3. Comprehend advanced IoT applications and technologies from the basics of IoT.
CO4. Understand working principles of various sensor for different IoT platforms.
CO5. Estimate the cost of hardware and software for low cost design IoT applications.

CO-PO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2							3		2
CO2	2	3	3	3								
CO3	3	2										
CO4	2	3	3									
CO5	2	3	2									

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
Database Security (6th Semester)

CO1: Identify access control methods for secure web & database application development
CO2: Analyse vulnerabilities in the Web and Database applications.
CO3: Design & Evaluate methods for web & database intrusion detection
CO4: Design Secure Database schema
CO5: Apply security audit methods

CO-PO Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	1	1	1						2
CO2		1	1	1	1	1						
CO3		1	2	2	1	2						
CO4						2						
CO5	1		2	2		1						1

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	2.4	1.35	1.10

<u>**Course outcomes:**</u>

Entrepreneurship Development (6th Semester)

CO1: -
Knowthevariousconceptsrelatedtoentrepreneurshipandintrapreneurshipandknowtheirclassifications.

CO2: -
Abletoidentifyopportunitiesinthemarketaccordingtotheentrepreneurialenvironments.

CO3:
Getknowledgeaboutthecapitalflowanditsmanagementtostartupandrunabusiness.

CO4: Identifytheshortfallsandcausesofbusiness failures.

CO5: -
GetknowledgeaboutdifferentpoliciesmadebyGovernmentandotherregulatoryauthorities.

CO-POMapping												
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	1	-	2	1	3	1	1	1	3
CO2	1	-	2	3	3	3	2	3	3	1	2	3
CO3	-	-	-	1	3	3	-	1	1	1	3	3
CO4	1	-	2	3	3	3	2	3	3	1	3	3
CO5	-	-	-	-	-	3	3	3	1	1	3	3

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:

CryptographyandNetworkSecurity (7th Semester)

CO1: -
Identifysecurityobjectives&threatsandenumeratenecessaryservices&mechanisms foreffective countermeasures.

CO2: -
Explainthemathematicalfoundationofcryptographythroughmodulararithmetic,linearalgebra,numbertheory,factorizationanddiscretelogarithm.

CO3: -
Analyzetheperformanceoftraditionalsymmetrickeycryptographytechniquesand modernsymmetrickeycipherslikeDESandAES.

CO4: -Applypublickeycryptographyand
Hashalgorithmsinencryption,dataintegrity,authentication,digitalsignature,andkeyexchange.

CO5: -
ApplycryptographytechniquesinvariousnetworksecurityprotocolslikeSSL,TLS, PGP,S/MIME,andIPsec andunderstandE-mailSecurity.

CO-PO Mapping												
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1						3		3
CO2	3	3	1	1						3		3
CO3	3	3	3	2		2				3		2
CO4	3	3	3	2		2				3		3
CO5	1	3	3	2		2				3		3

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:

Soft Computing(7th Semester)

CO1: Apply fuzzy logic and fuzzy inference system concept to design automation system for real life problems.

CO2: Train the Artificial Neural Network for decision making in real life environment.

CO3: Use the concepts of Artificial Neural Network (ANN) to solve real life engineering and societal problems.

CO4: Apply the concepts of genetic algorithm to solve engineering optimization problems.

CO5: Envisage the need of hybridization, and to develop hybrid models for solving complex problems.

CO-PO Mapping										
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	3	3	1	2	
CO2	3	3	3	2	3	3	3	1	2	
CO3	3	3	3	2	3	3	3	2	3	
CO4	3	3	3	2	3	3	3	1	2	
CO5	3	3	3	2	3	3	3	1	3	

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
RealTime System (7ᵗʰ Semester)

CO1: - Enumeratetheneedandthechallenges inthedesign ofhardandsoftrealtimesystems.

CO2: - Comparedifferent schedulingalgorithms andtheschedulabilitycriteria.

CO3: -Determineschedulabilityofaset ofperiodictasksgivenaschedulingalgorithm.

CO4: - Applythebasics ofRTOSininterpretation ofrealtimesystems andrealtimedatabases.

CO5: - Interpret the basics of real time communication by the knowledge of real time models andprotocolsandIntegrateresourceaccessmechanismswiththeschedulingtechniquesandd evelopintegratedschedulibilitycriteria.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	3	1	1						
CO2	3	1	3	3	1	1						
CO3	3	1	3	3	1	1						
CO4	3	1	3	3	1	1						
CO5	3	1	2	3	1	1						

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:

ARTIFICIAL INTELLIGENCE (7th Semester)

CO1: -Ability to comprehend AI to analyze and map real-world activities to the digital world

CO2: -Ability to identify problems that are amenably solved by AI methods

CO3: -Understand probabilistic reasoning and knowledge representation techniques.

CO4: -Ability to design and carry out an empirical evaluation of different AI algorithms by using different learning methods.

CO5: -Understand the concept of expert system and Natural Language Processing.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	3	-	-	-	-	-	-	
CO2	2	2	1	3	1	-	-	-	-	-	-	
CO3	3	3	2	2	3	-	-	-	-	-	-	
CO4	2	2	1	1	3	-	-	-	-	-	-	
CO5	3	3	2	2	3	-	-	-	-	-	-	

CO-PO Mapping

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

Course outcomes:
COMPUTER GRAPHICS (7th Semester)

CO1: - Analyzeperformanceofalgorithmsandimplementvariousoperationsonarray andsparsematrix.

CO2: - Applythebasicoperations ofstacks andqueues tosolverealworldproblems.

CO3: - Implementdifferenttypesoflinkedlistoperationsandtheirapplications.

CO4: - Representdatausingtrees&graphstousethemin various reallifeapplications.

CO5: - Analyzevarioussortingalgorithmsandexploredifferent hashingtechniques.

CO-PO Mapping												
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3	2									
CO2	1		2	3								
CO3	3	2	2									
CO4	3		1									
CO5	2	3		1								

Course Outcomes	PSO1	PSO2	PSO3
C303.1	3	1	-
C303.2	3	1	1
C303.3	2	2	2
C303.4	2	1	2
C303.5	2	2	1
Average CO	**2.4**	**1.35**	**1.10**

SESSIONAL
Object Oriented Programming Using Java Lab (3rd semester)

Course Outcomes:
CO1: Implement Object oriented features using Java
CO2: Apply the concept of polymorphism and inheritance.
CO3: Implement exception handling
CO4: Develop window-based application using Swing.

Mapping with Program Outcomes (POs)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2										
CO2			2	3								
CO3			3	3								
CO4	1	2	2		3							

Data Structures Lab(3rd semester)

Course Outcomes:
CO1: Implement array operations to solve problems
CO2: Understand stack operations using programming
CO3: Implementation of queue and its operations
CO4: Apply Liked list to solve problems
CO5: Apply tree concept to design the model
CO6: Implement graph to solve routing problems.

Mapping with Program Outcomes (POs)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3										
CO2	1		3									
CO3	3	2	2									
CO4	3		1									
CO5	2	3										
CO6	2		2	3								

Computer Organization and Architecture Lab(3rd semester)

Course Outcomes:

CO1: Ability to demonstrate an understanding of the design of the functional units of a digital computer system.

CO2: Ability to Assemble a new computer system and dis assemble it.

CO3: To learn about SMPS and gain knowledge about power system of a computer system.

CO4: To gain knowledge on assembly programming with simulation approach.

CO6: To gain knowledge on different errors created in a computer system and approaches to resolve.

CO7: To understand the cache memory organization using simulator.

CO8: To understand ALU operation using simulator.

Mapping with Program Outcomes (POs)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	1								
CO2	3	1	2	1								
CO3	2		2	1								
CO4	3	3	2	2								
CO5	2	2		2								
CO6	2	2	2	1								
CO7	2		2	1								

Database Engineering (4th semester)

Course Outcomes:
CO1: Apply the concept for database design, create database, and develop queries
CO2: Implement different database programs using procedures, function, and cursor.
CO3: Implement database features such as triggers, packages etc.
CO4: Implement ODBC/JDBC connectivity with programming languages and write programs to store and retrieve data by using queries.
CO5: Use transaction management systems and recovery methods.

Mapping with Program Outcomes (POs)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3											
CO2	1	3	2									
CO3	3		2									
CO4	2		2									
CO5	2					2				1		

DAA LAB(4th semester)

Course Outcomes

CO1: Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming, etc.)

CO2: Implement a variety of algorithms such assorting, graph related, combinatorial, etc., in a high level language.

C03: Analyse and compare the performance of algorithms using language features.

CO4: Apply and implement learned algorithm design techniques and data structures to solve real-world problems.

Mapping with Program Outcomes (POs)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3									1
CO2	2	3	3									
CO3	1	3	2									1
CO4	2	3	3									1

Data Communication and Computer Networks Lab (4th semester)

CO1: Experiment with transmission media, connector, Hubs, Switches and installation of NIC.

CO2: Implement client server applications with TCP/UDP Socket Programming in a standalone machine and over a network.

CO3: Apply HTTP over TCP/UDP connection with help of a Browser.

CO4: Simulate Data link layer protocols using NetSim/NS3.

CO5: Develop applications to communicate over heterogeneous networks (Internet).

Mapping with Program Outcomes (POs)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	2							2
CO2	3	2	3	2	2							2
CO3	2	2	3	2	3							2
CO4	2	3	3	3								
CO5	2	2	2	2								

Operating System Lab(5th semester)

CO1:Read, understand and trace the execution of various unix commands and editors.

CO2:Develop programs using Shell Programming.

CO3: Analyze the performance of various CPU Scheduling Algorithms.

CO4: Implement various memory allocation methods.

CO5:-Analyze the performance of the various Page Replacement Algorithms.

Mapping with Program Outcomes (POs)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	3	1							1	
CO2	2	3	3	2							1	
CO3	3	2	3	1							1	
CO4	3	2	2	1							1	
CO5	2	3	3	2							1	

Advanced JAVA Programming Lab(5th semester)

Course Outcomes:

1. Develop an application which can also be connected with the database.

2. To learn Server-Side Programming using Servlets and Java Server Pages.

3. Design a web application which can work as a dynamic web with the help of JDBC.

4. To learn the operations perform on data among web applications.

Mention the modified / newly topics added in the syllabus:

NIL

Mapping with Program Outcomes (POs)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2	1	1			2			
CO2	3	2	3	2	2	1			2			
CO3	2	1	3	2	3	2			2			2
CO4	2	3	3	3	3	3			3	1	1	3

Software Engineering Lab (6th semester)

CO1:Perform requirement analysis and prepare SRS document for a software product.

CO2: Design a software using FOD methodology and create the Structure Charts & DFDs.

CO3: Design a software using OOD methodology and create UML models using a CASE tool.

CO4: Develop the design of User Interfaces of a software using principles of a good design.

CO5: Develop a software using a high-level programming language or tool and test the product

Mapping with Program Outcomes (POs)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1		2		2		3			
CO2	2	3	2		2		2		3			
CO3	2	3	2		3		2		3			
CO4	2	3	2		3		2		3			
CO5	2	3	3		3		2		1			

Compiler Design Lab (6th semester)

CO1: Understand the practical approaches of how a compiler works.

CO2: Understand and define the role of lexical analyser, use of regular expression and transition diagrams.

CO3: Understand and analyse the role of syntax and semantics of Programming languages in compiler construction

CO4: Understand the working of Lex and yacc compiler for debugging of programs.

CO5: Learn & use the new tools and technologies used for designing a compiler.

Mapping with Program Outcomes (POs)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1		2		2		2			
CO2	3	3	2		2		2		3			
CO3	2	2	2		3		2		2			
CO4	2	2	2		3		2		3			
CO5	2	3	3		3		2		1			