ADITYA ENGINEERING COLLEGE

An Autonomous Institutuion

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Department of Computer Science and Engineering

M.Tech. (Computer Science and Engineering)- AR17 Course Articulation Matrix

Note: Correlation Levels are 1 or 2 or 3.   Where 1 Slight(Low), 2 Moderate(Medium), 3 Substantial (High).

	CO Statements	POs												PSOs	
I SEM															
Course Code	**172CO1T01 - ADVANCED DATA STRUCTURES AND ALGORITHM ANAYLSIS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply basic linear data structures to solve complex problems	1	2	1	3	3	2	-	-	2	-	1	-	2	2
CO2	Apply elementary algorithms to perform sorting & searching.	1	2	1	3	3	2	-	-	2	-	1	-	2	2
CO3	Demonstrate Tree and Graph Traversals.	-	1	-	2	2	1	-	-	3	-	1	-	1	1
CO4	Illustrate various Hashing techniques and operations.	-	1	-	2	2	1	-	-	3	-	1	-	1	1
CO5	Construct Priority Queues using Heaps	1	2	1	3	3	2	-	-	2	-	1	-	2	2
CO6	Compare and Contrast the operations of various Search Trees.	2	3	2	2	2	3	-	-	1	-	3	-	3	3
Course Code	**172CO1T02 - DATABASE MANAGEMENT SYSTEMS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate the fundamentals of DBMS and its applications.	-	2	-	-	-	-	-	-	-	-	-	-	2	2
CO2	DesignER models for various real world applications.	1	2	1	3	3	-	-	3	3	-	-	-	2	2
CO3	Apply Queries to solve complex problems.	1	2	1	3	3	-	-	-	3	-	-	-	2	2

	CO Statements	POs												PSOs	
CO4	Utilize the normalization techniques to minimize the redundancy.	1	2	1	3	-	-	-	-	-	-	-	-	2	2
CO5	Classify properties of transactions along with concurrency control mechanisms.	2	3	2	3	3	-	-	-	-	-	-	-	3	3
CO6	Explain Storage and Indexing mechanisms.	-	1	-	2	-	-	-	-	-	-	-	-	1	1
Course Code	172CO1T03 - COMPUTER ORGANIZATION AND ARCHITECTURE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Make use of various data representation to solve real time applications.	1	2	1	3	3	2	1	-	3	-	-	-	2	2
CO2	Apply arithmetic and logical operators to perform various operations	1	2	1	3	3	2	-	-	3	-	-	-	2	2
CO3	Summarize the various addressing modes and instructions sets.	-	-	1	2	2	-	-	-	-	-	-	-	1	1
CO4	Compare and Contrast various memory mapping techniques.	2	3	1	3	2	-	-	-	-	-	-	-	3	3
CO5	Explain I/O mechanism used in computer system.	-	3	-	2	2	-	-	-	-	-	-	-	1	1
Course Code	172CO1T04 - MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply mathematical logic to solve computational problems	1	2	-	3	-	2	-	-	3	-	-	-	2	2
CO2	Distinguish between statement logic and predicate logic.	-	-	-	2	-	1	-	-	3	-	-	-	1	1
CO3	Make use of the concepts related to set theory and algebraic structure for solving mathematical problems.	1	2	1	3	-	-	-	-	3	-	-	-	2	-
CO4	Analyze the mathematical concepts based on elementary combinatories	2	3	2	-	3	-	-	-	-	-	-	-	3	3
CO5	Solve recurrence relation by substitution and generating functions	1	2	-	-	-	-	-	-	-	-	-	-	2	2
CO6	Apply Graph Theory to solve computational problems.	1	2	1	3	3	-	-	3	3	-	-	-	2	2

	CO Statements	POs												PSOs	
Course Code	**172CO1T05 - COMPUTER NETWORKS**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the basic concepts of computer networks and various reference models	-	1	-	2	-	1	-	-	3	-	-	-	2	2
CO2	Explain the functionalities of Physical layer.	-	-	-	-	-	2	-	-	3	-	-	-	3	3
CO3	Discuss the design issues in Data link layer	-	1	1	2	-	-	-	-	3	-	-	-	2	-
CO4	Describe the various elementary Data link layer protocols.	-	1	-	-	2	-	-	-	-	-	-	-	3	3
CO5	Compare and contrast the various medium access control mechanisms.	2	3	-	-	-	-	-	-	-	-	-	-	2	2
CO6	Apply various routing algorithms to solve real time applications.	1	2	1	3	3	-	-	3	3	-	-	-	2	2
CO7	Explain the IEEE Standards.	2	3	-	-	-	-	-	-	-	-	-	-	1	1
CO8	Discuss various Application layer protocols.	2	3	-	-	-	-	-	-	-	-	-	-	1	1
Course Code	**172CO1E01 - SOFTWARE ENGINEERING**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the basic concepts of Software Engineering.	-	1	-	2	2	1	-	3	3	3	1	-	1	1
CO2	Compare & Contrast the Software Development Process Models.	2	3	2	2	2	3	1	3	3	3	3	-	3	3
CO3	Apply various techniques to elicitate and document the software requirements.	1	2	1	3	3	2	-	3	3	3	2	-	2	2
CO4	Analyze the different design models.	2	3	2	3	3	3	1	3	3	3	3	-	3	3
CO5	Describe user interface design methodologies.	-	1	-	2	2	1	-	3	3	3	1	-	1	1
CO6	Discuss the Coding Principles and Software testing life cycle	-	1	-	2	2	1	-	3	3	3	1	-	1	1

	CO Statements	POs												PSOs	
CO7	Explain the CASE tool in Software Development	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Course Code	**172CO1E02 - ADVANCED OPERATING SYSTEMS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate basics of advanced operating system.	-	1	-	2	2	-	-	-	-	-	-	-	1	1
CO2	Categorize deadlock detection algorithms in distributed environment.	2	3	2	3	3	-	-	3	3	-	-	-	3	3
CO3	Apply agreement protocols to solve agreement problems	2	2	1	3	3	-	-	-	3	-	-	-	2	2
CO4	Choose best load balancing techniques and failure recovery methods.	2	2	1	3	3	-	-	-	-	-	-	-	2	2
CO5	Make use of protection and security mechanisms in distributed systems.	2	2	1	3	3	-	-	-	-	-	-	-	2	2
CO6	Interpret multiprocessor systems and database operating systems	-	1	-	2	2	-	-	-	-	-	-	-	1	1
Course Code	**172CO1E03 - COMPILER DESIGN**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyze the different phases and passes of compiler.	-	-	-	3	-	-	-	-	-	-	-	-	3	3
CO2	Classify different types of parsers.	-	3	-	2	2	3	-	-	-	-	-	-	3	3
CO3	Develop different types of parsing tables.	-	2	-	3	3	2	-	-	-	-	-	-	3	3
CO4	Construct symbol table structure.	1	2	1	3	3	1	-	-	-	-	-	-	2	2
CO5	Construct the various forms of intermediate codes.	1	2	1	-	-	2	-	-	-	-	-	-	2	2
CO6	Discuss the techniques for code optimization.	1	-	1	2	2	1	-	-	-	-	-	-	1	1
CO7	Develop the code generation algorithm and its implementation	1	2	1	3	3	2	-	-	-	-	-	-	2	2

	CO Statements	POs												PSOs	
Course Code	**172CO1E04 -HUMAN COMPUTER INTERACTION**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Apply good design principles fulfilling direct manipulation methods in various GUI applications	1	-	1	3	3	-	-	-	-	-	2	-	2	2
CO2	Estimate the design process in nexus with human.	2	3	2	-	3	3	-	3	3	-	3	-	3	3
CO3	Organize data & content in aesthetic presentation on the screen.	1	2	-	3	3	2	-	-	3	-	2	-	2	2
CO4	Develop software applications using GUI components.	1	2	-	-	3	2	-	-	3	3	2	-	2	2
CO5	Compare and contrast various interacting devices ranging from low to high end.	-	3	-	-	3	3	-	-	3	-	3	-	3	3
CO6	Outline the interface specification methods & tools.	-	3	-	3	3	3	-	-	3	-	3	-	3	3
Course Code	**172CO1L01 - CSE LAB-1 (Advanced Data Structures and Data Base Management System LAB)**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Illustrate linear data structures using Arrays and Linked List	1	2	1	-	-	-	-	-	-	-	-	-	2	2
CO2	Analyze Searching and Sorting Algorithms	1	2	1	-	-	-	-	-	-	-	-	-	3	3
CO3	Develop Insert, Delete and Search Operations on Trees and Graphs	1	2	1	-	-	-	-	-	-	-	-	-	2	2
CO4	Build queries on a database using SQL DML/DDL commands.	1	2	1	-	-	-	-	-	-	-	-	-	2	2
CO5	Apply integrity constraints on a database using RDBMS	1	2	1	-	-	-	-	-	-	-	-	-	2	2
CO6	Develop PL/SQL stored procedures, stored functions, cursors and packages.	1	2	1	-	-	-	-	-	-	-	-	-	2	2
CO7	Build GUI applications using 4GL	1	2	1	-	3	-	-	-	-	-	-	-	2	2

	CO Statements	POs												PSOs	

	II SEM															
Course Code	**172CO2T06 - CYBER SECURITY**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate types of security attacks, services and mechanisms	-	1	-	2	-	1	-	-	-	-	-	-	1	1
CO2	Explain various convential encryption algorithms principles Demonstrate various concepts in number theory.	-	1	-	2	2	-	-	-	-	-	-	-	1	1
CO3	Interpret different kinds of encryption/decryption techniques	1	2	1	3	3	-	-	-	-	-	-	-	2	2
CO4	Explain malicious software and firewall	-	-	-	2	2	-	-	-	-	-	-	-	1	1
CO5	Describe the IP security architecture	-	1	-	2	2	-	-	3	3	-	-	-	3	3
Course Code	**172CO2T07 - DATA WAREHOUSING AND DATA MINING**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate building blocks of Data Warehouse.	-	2	-	-	-	-	-	-	-	-	1	-	1	1
CO2	Utilize OLAP tools for Query Processing.	1	2	1	3	3	2	-	-	-	-	-	-	2	2
CO3	Choose appropriate data mining function to solve complex business problems.	-	1	-	3	3	-	-	-	-	-	-	-	2	2
CO4	Interpret Frequent Items in Transactional data using Association Rule Mining.	-	1	-	2	2	1	-	3	-	-	1	-	1	1
CO5	Apply Classification Algorithms to build models.	1	2	1	3	3	2	-	2	-	-	2	-	2	2
CO6	Apply clustering techniques to group high dimensional data.	1	2	1	3	3	2	-	3	-	-	2	-	2	2
CO7	Make use of Data Warehouse and Mining Applications to solve research problems	1	2	1	3	3	2	-	3	3	-	2	-	2	2
Course Code	**172CO2T08 - BIG DATA ANALYTICS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2

	CO Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
						POs								PSOs	
CO1	Develop various data structures using java collection framework.	1	-	-	3	3	-	-	-	-	-	-	-	2	2
CO2	Construct Hadoop Cluster with required nodes.	3	3	-	-	3	-	-	-	-	-	-	-	3	3
CO3	Choose map reduce approach to solve big data Problems.	1	2	1	3	3	2	-	3	3	3	-	-	2	2
CO4	Make use of Pig Framework to work with big data.	1	2	1	3	3	2	-	3	3	-	-	-	2	2
CO5	Utilize Hive to Structure the Data.	1	2	1	3	3	2	-	3	-	-	-	-	2	2
Course Code	172CO2T09 - ADVANCED UNIX PROGRAMMING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe Unix file system.	-	-	-	-	-	1	-	-	-	-	-	-	1	1
CO2	Apply various Unix commands for simplifying common tasks.	1	-	1	-	3	-	-	3	-	-	-	-	2	2
CO3	Develop shell scripts for solving simple computational problems.	1	-	1	-	3	-	-	3	-	3	-	-	2	2
CO4	Use Filters efficiently.	-	-	-	2	2	-	-	3	-	-	-	-	1	1
CO5	Analyze various process creation mechanisms.	2	-	-	3	3	-	-	-	-	3	-	-	3	3
CO6	Demonstrate the IPC mechanisms.	1	-	-	3	3	-	-	3	-	3	-	-	2	2
Course Code	172CO2E05 - MACHINE LEARNING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Discuss the need for Machine Learning	-	1	-	2	2	-	-	-	-	-	-	-	1	1
CO2	Compare and Contrast the supervised and unsupervised learning	-	1	-	2	2	-	-	-	-	-	-	-	1	1
CO3	Illustrate the hypothesis learning methods.	-	1	-	2	2	-	-	-	-	-	-	-	1	1

	CO Statements	POs												PSOs	
CO4	Apply tree and rule models for learning to solve real time problems.	1	2	1	3	3	-	-	-	-	-	-	-	2	2
CO5	Describe linear models and distance based models.	-	1	-	2	2	-	-	-	-	-	-	-	1	1
CO6	Formulate the probabilistic models for normal distribution.	1	2	1	3	3	-	-	-	-	-	-	-	2	2
CO7	Create the feature for construction, selection and transformation	1	2	1	3	3	-	-	-	-	-	-	-	2	2
Course Code	172CO2E06 - DIGITAL IMAGE PROCESSING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Demonstrate the applications of computer graphics.	1	1	-	2	2	1	-	-	3	3	-	-	1	1
CO2	Apply line and circle generation algorithms to create complex graphical structures.	1	2	1	3	3	2	-	-	3	3	-	-	2	2
CO3	Illustrate the basic properties of digital images.	-	1	-	2	2	1	-	-	3	3	-	-	1	1
CO4	Apply morphological image processing operations to process an image.	1	2	1	3	3	2	-	-	3	3	-	-	2	2
CO5	Interpret an image using different segmentation techniques.	1	2	1	3	3	2	-	-	3	3	-	-	2	2
CO6	Make use of different types of compression techniques in image data compression.	1	2	1	3	3	2	-	-	3	3	-	-	2	2
Course Code	172CO2E07 - MOBILE COMPUTING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the basic concepts and principles in mobile computing	1	2	-	-	3	-	-	-	-	-	-	-	2	2
CO2	Demonstrate GSM architecture in Mobile Network Environment	-	-	-	-	-	-	1	-	-	-	-	-	2	2
CO3	Illustrate the concept of Medium Access Control Mechanisms	1	-	-	-	2	1	1	3	-	-	-	-	1	1
CO4	Apply Mobile IP in Wireless environment to handle various consequences.	1	2	1	3	3	2	1	-	3	3	-	-	1	1

	CO Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
						POs								PSOs	
CO5	Compare Traditional TCP and Mobile TCP	-	-	1	2	-	1	-	-	-	-	-	-	2	2
CO6	Explain the database issues and data recovery in the mobile environment.	2	1	1	2	2	3	1	3	-	-	3	-	3	3
CO7	Discuss the data delivery mechanisms and synchronization needed in the wireless environment	1	1	-	-	2	-	1	-	3	3	-	-	1	1
CO8	Analyze the Routing Techniques in MANET.	2	3	2	3	3	3	1	3	-	3	-	-	3	3
CO9	Summarize the protocols and platforms for mobile computing.	1	-	1	2	-	2	1	-	-	-	-	-	1	1
Course Code	172CO2E08 - CLOUD COMPUTING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Explain the fundamentals of computing paradigm and cloud computing.	-	1	-	2	2	1	-	-	-	-	-	-	1	1
CO2	Describe the challenges in cloud computing.	-	1	-	2	2	1	-	-	-	3	-	-	1	1
CO3	Illustrate the architecture of cloud computing.	-	1	-	2	2	1	-	-	-	-	-	-	1	1
CO4	Compare and contrast various approaches of virtualization.	-	1	-	2	2	1	-	-	-	-	-	-	1	1
CO5	Apply the service models to work on any real cloud service.	1	2	1	3	3	2	-	-	-	-	2	-	2	2
CO6	Demonstrate the service management and security of the cloud.	-	1	-	2	2	1	-	-	-	-	-	-	1	1
Course Code	172CO2E09 - INTERNET OF THINGS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the basic concepts of embedded systems and challenges of IOT	-	-	-	-	-	-	-	-	-	-	-	-	1	1
CO2	Explain the 8051 architecture &programming	-	1	-	2	2	1	-	-	-	-	-	-	1	1
CO3	Apply open source hardware to design IOT applications	-	-	-	3	3	2	-	-	-	-	-	-	2	2

	CO Statements	POs												PSOs	
CO4	Apply the tools and technologies to build the real-time applications	1	2	1	-	-	-	-	3	3	-	2	-	2	2
CO5	Analyze the various case studies of IOT	2	3	1	2	3	-	-	3	3	3	-	-	3	3
Course Code	172CO2E10 - BIO-INFORMATICS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the basic concepts of biology and Information Technoolgy.	-	1	-	2	2	1	-	3	-	-	1	-	1	1
CO2	Make use of Data Visualization Techniques to display biological data in various forms.	1	2	-	3	3	-	-	-	1	-	2	-	2	2
CO3	Apply Statistical Methods to solve complex biological problems.	1	2	1	-	3	2	-	-	-	-	2	-	2	2
CO4	Utilize Pattern Matching Techniques to represent Protein and DNA Sequence data.	1	2	1	-	3	2	-	2	2	-	2	-	2	2
CO5	Organize pair-wise sequence alignment using dynamic Programming.	2	3	2	3	3	3	-	1	-	-	3	-	3	3
CO6	Illustrate simulation tools to predict the secondary and tertiary structures of protein.	-	1	-	2	3	1	-	3	-	-	1	-	1	1
Course Code	172CO2L02 - CSE LAB-2 (Advanced Unix Programming and Big Data Analytics LAB)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Implement Standard IO and System calls(k3).	1	2	1	-	-	-	-	-	-	-	c	-	2	2
CO2	Bulid the Inter Process communication.	2	3	2	-	-	-	-	-	-	-	-	-	3	3
CO3	Apply PT hread Library to create threads.	1	2	1	-	-	-	-	-	-	-	-	-	2	2
CO4	Implement linear and non linear data structures using Java.	1	2	1	-	-	-	-	-	-	-	-	-	2	2
CO5	Build the Hadoop using various installation modes of Hadoop.	1	2	1	-	-	-	-	-	3	-	-	-	2	2
CO6	Implement Big Data Problems using Map Reduce approach.	1	2	1	3	3	-	-	-	3	-	-	-	2	2
CO7	Build queries using Hive Query Language and Pig Latin.	1	2	1	3	3	-	-	-	3	-	-	-	2	2