A.D.M. COLLEGE FOR WOMEN

(Autonomous)

Affiliated to Bharathidasan University

(Nationally Accredited with "A" Grade by NAAC – 3rd Cycle)

NAGAPATTINAM 611 001.

PG DEPARTMENT OF COMPUTER SCIENCE

Programme: B.Sc., Computer Science

PO No.	Programme Outcomes *Upon completion of the B.Sc., Degree Programme, the graduate will be able to*
PO 1:	Under Graduate students are to Apply algorithmic, mathematical and scientific reasoning to a variety of computational problems
PO 2:	Undergraduate students to analyze impacts of computing on individuals organization and society.
PO 3:	Undergraduate students are recognition of the need for and ability to engage in continuing professional development.
PO 4:	Undergraduate students are to be exposed to technical, analytical and creative.
PO 5:	The Under Graduate students are recognize the social and ethical responsibilities of a professional working in the various disciplines

PSO No.	Programme Specific Outcomes *Upon completion of these courses the student would be able*
PSO 1:	To acquire knowledge with fundamentals of computer science to solve complex problems related to the field of Computer science
PSO 2:	Ability to identify, formulate and analyze complex problems related to computer science and reaching a substantiated conclusions using mathematics and its applications
PSO 3:	Ability to understand professional & ethical responsibility in the field of Computer Science.
PSO 4:	Understand the impact of the Computer professionals in societal and environmental contexts.
PSO 5:	Capability to use appropriate software for analysis of data and relevant information from various sources for easy access and evaluation in variety of learning situation.

Course Title	MAJOR CORE 1: C PROGRAMMING		
Code	**XUA**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the basic terminology of algorithm, flowchart and gain awareness used in computer programming.	PSO1,PSO2	U
CO-2	Design programs involving the various concepts like decision structures, loops, functions of C language.	PSO 2	An
CO-3	Demonstrate the single, multi-dimensional arrays, String functions and user defined functions.	PSO 2	U
CO-4	Compare the structure and union of C and apply it to construct array of structures and structure function.	PSO 5	An
CO-5	Understand the dynamics of memory by the use of pointers and pointers with functions.	PSO 1	Ap

Course Title	MAJOR CORE 4: OBJECT ORIENTED PROGRAMMING USING C++ WITH DATA STRUCTURES		
Code	**XUD**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Learn the basic concepts in Object-Oriented programming	PSO 2	U
CO-2	Develop programming skills by applying Object-Oriented programming	PSO 2	An
CO-3	Discuss the function overloading and Member Functions	PSO 2	An
CO-4	Understand the concepts of Constructors and Inheritance	PSO 5, PSO1	An
CO-5	An Ability to incorporate Exception Handling in Object-Oriented programs and analyze File Input/Output Streams.	PSO 1, PSO 3	C

Course Title	MAJOR CORE 6 – DATABASE SYSTEMS		
Code	**XUF**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Emphasize the need, role, importance and uses of databases in application development	PSO 1	C
CO-2	Design E-R modeling for a given situation and provide the foundation fordevelopment of relational database structure.	PSO 4	Ap
CO-3	Identify the advantages of the database approach over the file based data storage system.	PSO 2	An
CO-4	Distinguish between different models of file organizing, storing and using of data and understand the relational model and relational algebra operations.	PSO 3	An
CO-5	Normalize the relational tables applying normalization rules and apply PL/SQL procedural interfaces statement on relational tables as per requirements.	PSO 4	An

Course Title	MAJOR CORE 8 – JAVA PROGRAMMING		
Code	**XUH**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Use an integrated development environment to write	PSO 1	C
CO-2	Compile and run	PSO 2	Ap
CO-3	Test simple object oriented java programs.	PSO 2	Ap
CO-4	Read and make elementary modifications to Java programs that solve real worldproblems	PSO 3	An
CO-5	Validate input in a Java Program	PSO 4	U

Course Title	MAJOR CORE 10: WEB TECHNOLOGY		
Code	**XUJ**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Illustrate the web technology concept to create schemas and dynamic web pages.	PSO 3	R, U
CO-2	Understand the concept of CSS for dynamic presentation effect in HTML and XMLdocuments.	PSO 1	R
CO-3	Describe the mark-up languages for processing, identifying and presenting information inweb pages.	PSO 5	Ap
CO-4	Apply scripting languages in HTML document to add interactive components to web pages	PSO 2	Ap
CO-5	Define the knowledge about HTML document with element types, hyperlinks, images, list,tables and forms	PSO 1	Ap

Course Title	MAJOR CORE 11– OPERATING SYSTEMS		
Code	**BXK**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Recognize the basic concepts of operating system.	PSO 2	R,U
CO-2	Understand the process and thread concepts.	PSO 2,6	R,U
CO-3	Distinguish the concepts of deadlocks and storage management in operating systemconcepts.	PSO 2	U
CO-4	Apply various file system implementation and optimization techniques using files.	PSO 3	Ap
CO-5	Illustrate the virtual machine and distributed system in various fields.	PSO 4	U

Course Title	MAJOR CORE 12 – COMPUTER NETWORKS		
Code	**XUL**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Provide an overview of the concepts and fundamentals of data communication andcomputer networks.	PSO 1	R, U
CO-2	Understand the terminology and concepts of the OSI reference model and theTCP·IP reference model.	PSO 2	U
CO-3	Describe the significance of protocols used in data communications and networking.	PSO 2	U
CO-4	Illustrate the importance of network security and application of cryptographicmethods in establishing security.	PSO 3	U
CO-5	Interpret the data flow in each layer and services of each layer.	PSO 4	An

Course Title	MAJOR ELECTIVE 1 – WEB GRAPHICS		
Code	**XUE3**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Appreciate the concepts of multimedia.	PSO 1	R, U
CO-2	Work with animations, tweening and interactive elements.	PSO 1 & PSO 2	R
CO-3	Design shapes in multimedia.	PSO 2	U
CO-4	Adopt skills to make multimedia applications.	PSO 2	U
CO-5	Produce a presentation using multimedia tools.	PSO 1 & PSO 2	An

Course Title	MAJOR BASED ELECTIVE I BIG DATA AND ANALYTICS		
Code	**XUE3**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Define the big data, types of data and understand the need of big data analytics.	PSO 4	R, U
CO-2	Describe the Hadoop architecture and File system.	PSO 2	R
CO-3	Apply the Map Reduce Programming model for real-world problems.	PSO 3	Ap
CO-4	Distinguish No SQL databases from RDBMS.	PSO 3	R
CO-5	Demonstrate the working of row and column oriented data stores.	PSO 1	R

Course Title	MAJOR ELECTIVE 1 – MOBILE COMMUNICATION		
Code	**XUE3**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Explain the basics of mobile telecommunication system	PSO 5	E, U
CO-2	Illustrate the generations of telecommunication systems in wireless network	PSO 2	U
CO-3	Understand the architecture of Wireless LAN technologies	PSO 2	U
CO-4	Determine the functionality of network layer and Identify a routing protocol for a given Adhoc networks	PSO 1	An
CO-5	Explain the functionality of Transport and Application layer	PSO 5	An

Course Title	SKILL BASED ELECTIVE II WEB TECHNOLOGY AND BIOINFORMATICS LAB		
Code	**XUS2Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Knowledge and awareness of the basic principles and concepts of biology, computer scienceand mathematics	PSO 1	R, U
CO-2	Existing software effectively to extract information from large databases and to use this information in computer modeling	PSO 5	R, A
CO-3	Problem-solving skills, including the ability to develop new algorithms and analysis methods	PSO 1	U
CO-4	An understanding of the intersection of life and information sciences, the core of shared concepts, language and skills the ability to speak the language of structure-function relationships, information theory, gene expression, and database queries.	PSO 1	R, A
CO-5	Design and implement dynamic websites with good aesthetic sense of designing and latest technical	PSO 3	A

Course Title	SKILL BASED ELECTIVE II SOFTWARE TESTING TOOLS LAB		
Code	**XUS2Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Apply modern software testing processes in relation to software development and Projectmanagement.	PSO 2	R, U
CO-2	Create test strategies and plans, design test cases	PSO 2,6	R, An
CO-3	Prioritize and	PSO 2	U, A
CO-4	Execute	PSO 3	R
CO-5	Manage incidents and risks within a project.	PSO 4	R, An

Course Title	SKILL BASED ELECTIVE III MULTIMEDIA LAB		
Code	**XUS3Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To learn and understand technical aspect of Multimedia System	PSO 2	R, U
CO-2	Design and implement an animation for various themes.	PSO 2,6	R, An
CO-3	Prepare multimedia advertisement.	PSO 2	U, A
CO-4	Develop various Multimedia Systems applicable in real time.	PSO 3	R
CO-5	To develop multimedia application and analyze the performance of the same.	PSO 4	R, An

Course Title	SKILL BASED ELECTIVE III INTERNET WITH ASP LAB		
Code	**XUS3Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the Microsoft Web Technologies stack.	PSO 2	R, U
CO-2	Develop web applications using Model View Control.	PSO 2,6	R, An
CO-3	Create MVC Models and write code that implements business logic within Model methods,properties, and events.	PSO 2	U, A
CO-4	Create Views in an MVC application that displays and edits data and interacts with Modelsand Controllers.	PSO 3	R
CO-5	Boost your hire ability through innovative and independent learning.	PSO 4	R, An

Course Title	MAJOR CORE 8 – ADVANCED COMPUTER ARCHITECTURE		
Code	**XUM**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Collected knowledge on Intel 8085 architecture and its addressing modes.	PSO 2	R, U
CO-2	Understood and the concepts of 8-bit processors.	PSO 2,6	R, An
CO-3	Got the fundamental knowledge of 16-bit processors.	PSO 2	U, A
CO-4	Familiarity on interfaces and interrupts of Intel 8085.	PSO 3	R
CO-5	Acquired knowledge on assembly programming.	PSO 4	R, An

Course Title	MAJOR CORE 8 : PYTHON AND BIOINFORMATICS LAB		
Code	**XUNY**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Practice the Python programming language from its scratch	PSO 2	R, U
CO-2	Syntax and idioms.	PSO 2,6	R, An
CO-3	Patterns and styles.	PSO 2	U, A
CO-4	Illustrate the essentials of the Python library.	PSO 3	R
CO-5	Learn how to learn about other parts of the library when you need them.	PSO 4	R, An

Course Title	MAJOR BASED ELECTIVE II PYTHON PROGRAMMING		
Code	**MXH**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Posses knowledge on Cloud Computing and its architecture	PSO 1	R, U
CO-2	Acquire knowledge on Virtualization techniques	PSO 2	R
CO-3	Understand cloud infrastructure services	PSO 2	U, An
CO-4	Identify the parallel and distributed programming paradigms	PSO 4	R
CO-5	Handle various cloud computing tools and learn the Cloud security and security challenges	PSO 3,4	An , Ap
	statements.	3	
CO-5	Illustrate the usage of database and regular expression.	PSO 4	R, An

Course Title	MAJOR BASED ELECTIVE II COMPUTER GRAPHICS		
Code	**XUE4**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the basics of computer graphics, different graphics systems and applications ofcomputer graphics.	PSO 2	R, U
CO-2	Discuss various algorithms for scan conversion and filling of basic objects and theircomparative analysis.	PSO 2,6	R, An
CO-3	Use of geometric transformations on graphics objects and their application in compositeform.	PSO 2	U, A
CO-4	Extract scene with different clipping methods and its transformation to graphics displaydevice.	PSO 3	R
CO-5	Explore projections and visible surface detection techniques for display of 3D scene on 2Dscreen.	PSO 4	R, An

Course Title	MAJOR BASED ELECTIVE II ARTIFICIAL INTELLIGENCE		
Code	**XUE4**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Learn about the artificial intelligence problem and the characteristics of the problemspace.	PSO 2	R, U
CO-2	Demonstrate the fundamentals of heuristic search techniques and reasoning for problem solving.	PSO 2,6	R, An
CO-3	Understand the problem solving using predicates.	PSO 2	U, A
CO-4	Describe the concepts of expert systems with case studies for various applications.	PSO 3	R
CO-5	Apply the concepts of game playing techniques.	PSO 4	R, An

Course Title	MAJOR BASED ELECTIVE III MICROPROCESSOR LAB		
Code	**XUE5Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand and apply the fundamentals of assembly level programming ofmicroprocessors.	PSO 2	R, U
CO-2	To develop in students the assembly language programming skills.	PSO 2,6	R, An
CO-3	Understand 8085 microprocessor kit, knowledge of 8085 instruction set and ability toutilize it in assembly language programming.	PSO 2	U, A
CO-4	Understand real mode Memory addressing and ability to interface various devices tothe microprocessor.	PSO 3	R
CO-5	Provide practical hands-on experience with microprocessor applications and interfacing techniques.	PSO 4	R, An

Course Title	MAJOR ELECTIVE III DATA VISUALIZATION TOOL LAB		
Code	**XUE5Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Design and create data visualizations.	PSO 2	R, U
CO-2	Conduct exploratory data analysis using visualization.	PSO 2,6	R, An
CO-3	Craft visual presentations of data for effective communication.	PSO 2	U, A
CO-4	Use knowledge of perception.	PSO 3	R
CO-5	Cognition to evaluate visualization design alternatives.	PSO 4	R, An

Course Title	MAJOR ELECTIVE III UI/UX DESIGN AND ANIMATION LAB USING OPEN SOURCE TOOLS		
Code	**XUE5Y**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the Usability of Interactive systems.	PSO 2	R, U
CO-2	Understand Guidelines	PSO 2,6	R, An
CO-3	Understand Principles	PSO 2	U, A
CO-4	Be able to manage the development process	PSO 3	R
CO-5	Understand the Usability of Interactive systems.	PSO 4	R, An

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NAGAPATTINAM 611 001.

DEPARTMENT OF COMPUTER SCIENCE

Programme: M.Sc. Computer Science- 2021-22

PO No.	*Programme Outcomes* *Upon completion of the M.Sc. Degree Programme, the graduate will be ableto*
PO-1	Attain a sound understanding of the general principles of Computer Science.
PO-2	Obtain exposure to innovative, research-based topics within computing
PO-3	Acquire leadership qualities, and good communication, teamwork, social, and professional skills.
PO-4	Understand the impact of computer science solutions in a global and societal context
PO-5	Apply knowledge of computing to produce effective designs and solutions for specific problems

PSO No.	**Programme Specific Outcomes** ***Upon completion of these courses the studentwould***
PSO - 1	Acquire academic excellence with an aptitude for higher studies and research.
PSO – 2	Attain knowledge to develop and apply new computer technologies.
PSO – 3	Contribute to the local society and the global community related to Computer Science.
PSO – 4	Identify, formulate, and solve computer science problems.
PSO – 5	Practice high standard of professional ethics.

Course Title	MAJOR CORE I DATABASE AND NOSQL		
Code	**PGXA**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Define, compare and use the four types of NoSQL Databases (Document-oriented,Key Value Pairs, Column-oriented and Graph).	PSO 1	R, U
CO-2	Distinguish the different types of NoSQL databases.	PSO 2	R
CO-3	Explain the detailed architecture, define objects, load data, query data and performance tuneDocument-oriented NoSQL databases.	PSO 2,4	U, An
CO-4	Demonstrate an understanding of the detailed architecture, define objects, load data, querydata and performance tune Column-oriented NoSQL databases.	PSO 2,4	An, Ap
CO-5	Evaluate NOSQL database development tools and programming languages.	PSO 3,4	An , Ap

Course Title	MAJOR CORE II DESIGN AND ANALYSIS OF ALGORITHMS		
Code	**PGXB**		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Able to analyze different scenarios for running time of algorithms using asymptotic notations and Design using Recursion.	PSO 2	R, U
CO-2	Able to apply divide and conquer strategy for design of various algorithms	PSO 1	U,A
CO-3	Able to develop algorithms for well known problems using greedy methods.	PSO 1	U
CO-4	Able to understand the concept of backtracking for traversal and search algorithms.	PSO 4	U,A
CO-5	Able to describe and apply dynamic-programming approach for designing graph and matrix based algorithms.	PSO 5	An

Course Title	MAJOR CORE III MODERN OPERATING SYSTEMS		
Code	PGXC		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To understand the main components of an OS & their functions.	PSO 1	R, U
CO-2	To study the process management and scheduling.	PSO 4	R
CO-3	To understand various issues in Inter Process Communication (IPC) and the role of OS inIPC.	PSO 2	C
CO-4	To understand the concepts and implementation Memory management policies and virtualmemory.	PSO 4	C
CO-5	To study the need for special purpose operating system with the advent of new emergingtechnologies.	PSO 1	An

Course Title	MAJOR CORE IV ADVANCED JAVA PROGRAMMING		
Code	PGXD		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the fundamental concepts of the J2EE Technologies	PSO 1	R, U
CO-2	Comprehend the principles of J2EE programming.	PSO 4	R
CO-3	Learn the communication of client and server in the programming paradigm.	PSO 2	C
CO-4	Understand the concept of JSP and EJB	PSO 4	C
CO-5	Ability to connect Spring with XML	PSO 1	An

Course Title	MAJOR CORE VII DATA SCIENCE USING PYTHON		
Code	PGXG		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understanding the basic concepts of Python	PSO 1	R, U
CO-2	Preparing and pre-processing data	PSO 2	An
CO-3	Visualizing the results of analytics effectively	PSO 3	U, An
CO-4	Basic understanding of NumPy and Pandas	PSO 4	C, U
CO-5	Ability to use conditional loops and list by python	PSO 3,4	An

Course Title	MAJOR CORE VIII BIG DATA ANALYTICS		
Code	PGXH		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To provide an overview of an exciting growing field of Big Data analytics.	PSO 1	R,U
CO-2	To discuss the challenges traditional data mining algorithms face when analyzing Big Data.	PSO 1	R,U
CO-3	To introduce the tools required to manage and analyze big data like Hadoop, NoSql MapReduce.	PSO 1	R,U
CO-4	To teach the fundamental techniques and principles in achieving big data analytics withscalability and streaming capability.	PSO 1	R,U
CO-5	To introduce to the students several types of big data like social media, web graphs and datastreams.	PSO 1	R,U

Course Title	MAJOR CORE IX DISTRIBUTED TECHNOLOGIES		
Code	PGXI		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the features of Dot Net Framework along with the features of C#.	PSO 1	R, U
CO-2	Build well-formed XML Document and implement Web Service using Java.	PSO 2	An
CO-3	Students will identify the core concepts of distributed systems: the way in which several machines organize to correctly solve problems in an efficient, reliable and scalable way.	PSO 2	An
CO-4	Students will examine how existing systems have applied the concepts of distributed systems in designing large systems, and will additionally apply these concepts to develop sample systems.	PSO 3	U
CO-5	Apply Web Services concept in database.	PSO 4	An

Course Title	MAJOR CORE X DISTRIBUTED TECHNOLOGIES LAB		
Code	PGXJY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Use the features of Dot Net Framework along with the features of C#.	PSO 1,PSO2	R,U
CO-2	Create user interactive web pages using ASP.Net.	PSO 2, PSO 4	U,AN
CO-3	Build well-formed XML Document and implement Web Service using Java.	PSO 1,PSO2	R,U
CO-4	Students will examine how existing systems have applied the concepts of distributed systems in designing large systems, and will additionally apply these concepts to develop sample systems.	PSO 2, PSO 4	U,AN
CO-5	Performing Database operations for various web applications.	PSO 1,PSO2	R,U

Course Title	SELF PACED LEARNING (SPL) VIRTUALISATION AND CLOUD COMPUTING		
Code	PGXL		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Posses knowledge on Cloud Computing and its architecture	PSO 1, PSO2	R,U
CO-2	Acquire knowledge on Virtualization techniques	PSO 2, PSO 4	U,AN
CO-3	Understand cloud infrastructure services	PSO 1, PSO2	R,U
CO-4	Identify the parallel and distributed programming paradigms	PSO 1, PSO 2	R,U
CO-5	Handle various cloud computing tools to learn the Cloud security and security challenges	PSO 1, PSO2	R,U

Course Title	MAJOR CORE XII DATA MINING AND DATA WAREHOUSING		
Code	PGXM		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To introduce the concept of data Mining as an important tool for enterprise data management and as a cutting edge technology for building competitive advantage.	PSO 2	U,AP
CO-2	To enable students to effectively identify sources of data and process it for data mining	PSO 2	U,AP
CO-3	To impart knowledge of tools used for data mining	PSO 2	U,AP
CO-4	To provide knowledge on how to gather and analyze large sets of data to gain usefulbusiness understanding.	PSO 3	U,AP
CO-5	To make students well versed in all data mining algorithms, methods of evaluation.	PSO 1	U,AP

Course Title	MAJOR CORE XIII DATA MINING LAB		
Code	PGXN		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Perform exploratory analysis of the data to be used for mining.	PSO 2	U,AP
CO-2	Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.	PSO 2,6	U,AP
CO-3	Define and apply metrics to measure the performance of various data mining algorithms.	PSO 2	U,AP
CO-4	Develop skills and apply data mining tools for solving practical problems	PSO 3	U, Ap
CO-5	Advance relevant programming skills and gain experience and develop research skills by reading the data mining literature.	PSO 4	U,AP

Course Title	MAJOR CORE XIV MACHINE LEARNING AND R PROGRAMMING		
Code	PGXO		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Statistical Learning: Understand the behavior of data as you build significant models	PSO 1	R, U
CO-2	R for Machine Learning: Learn about the various libraries offered by R to manipulate,preprocess and visualize data	PSO 2	R
CO-3	Optimization Techniques: Learn to use optimization techniques to find the minimum errorin your machine learning model	PSO 2	U, An
CO-4	Fundamentals of Machine Learning: Supervised, Unsupervised Machine Learning andrelation of statistical modeling to machine learning	PSO 4	R
CO-5	Machine Learning Algorithms: Learn various machine learning algorithms like KNN,Decision Trees, SVM, Clustering in detail	PSO 3,4	An , Ap

Course Title	MAJOR CORE XV EMBEDDED LAB		
Code	PGXPY		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Experience with a set of tools for embedded systems programming and debugging.	PSO 1	U
CO-2	Experience with implementing several embedded systems with particular focus on theinteraction between multiple devices.	PSO 3	U,AN
CO-3	Design products using microcontrollers and various analog and digital ICs.	PSO 1	U
CO-4	Can read the datasheet for any embedded system, understand how it works.	PSO 4	AP
CO-5	Develop existing embedded systems by formulating the system design problem including the design constraints, create a design that satisfies the constraints, implement the design in hardware and software, and measure performance against the design constraints.	PSO 1	U,AP

Course Title	MAJOR BASED ELECTIVE I HIGH PERFORMANCE COMPUTING		
Code	PGXE1		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To understand fundamental concepts and techniques in parallel computation structuring anddesign.	PSO 2	U,AP
CO-2	To Study various architectures of high - performance computing systems.	PSO 2,6	U,AP
CO-3	To demonstrate the principles of Parallel Algorithm Design.	PSO 2	U,AP
CO-4	Investigate modern design structures of pipelined and multiprocessors systems.	PSO 3	U, Ap
CO-5	Understand the algorithms using parallel programming principle and to study about Parallel sparse matrix and vector multiplication	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE II ETHICAL HACKING		
Code	PGXE2		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the core concepts related to vulnerabilities and their causes	PSO 2	U,AP
CO-2	Understand ethics behind hacking and vulnerability disclosure	PSO 2,6	U,AP
CO-3	Appreciate the impact of hacking.	PSO 2	U,AP
CO-4	Exploit the vulnerabilities related to computer system and networks using state of the art tools and technologies.	PSO 3	U, Ap
CO-5	Able to know about the concept of Penetration Testing	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE II CRYPTOGRAPHY AND NETWORK SECURITY		
Code	PGXE2		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Explain the basics of number theory and compare various encryption techniques.	PSO 2	U,AP
CO-2	Understand the manner in which message Authentication code and hash function work andthe functionality of public key cryptography.	PSO 2,6	U,AP
CO-3	Familiarize in intrusion detection and firewall design	PSO 2	U,AP
CO-4	Examine the different types of security systems and applications.	PSO 3	U, Ap
CO-5	Discuss different levels of security and services and recognize various security policies	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE III COMPILER DESIGN		
Code	PGXE3		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Able to identify and understand different phases and passes of compiler and theirfunctioning.	PSO 2	U,AP
CO-2	Able to understand the concept of syntax analysis and to solve the problems of predictiveparsing.	PSO 2,6	U,AP
CO-3	Able to differentiate between top down and bottom up parsing and understand syntaxdirected translation techniques.	PSO 2	U,AP
CO-4	Able to apply code optimization and code generation techniques.	PSO 3	U, Ap
CO-5	To learn & use the new tools and technologies used for designing a compiler.	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE III MANET		
Code	PGXE3		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Appraise the importance of Adhoc networks such as MANET and VANET and WirelessSensor networks.	PSO 2	U,AP
CO-2	Understand design considerations for wireless networks.	PSO 2,6	U,AP
CO-3	Explain the design considerations for deploying the wireless network infrastructure.	PSO 2	U,AP
CO-4	Compare the differences between cellular and ad hoc networks and the analyse thechallenges at various layers and applications	PSO 3	U, Ap
CO-5	Summarize the protocols used at the MAC layer and scheduling mechanisms.	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE IV EMBEDDED SYSTEM		
Code	PGXE4		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Learn fundamentals of designing embedded systems.	PSO 2	U,AP
CO-2	Different design platforms used for an embedded systems application.	PSO 2,6	U,AP
CO-3	Explain the embedded system concepts and architecture of embedded systems.	PSO 2	U,AP
CO-4	The concepts and architecture of embedded systems.	PSO 3	U,Ap
CO-5	Analyze a given embedded system design and identify its performance critical points.	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE IV SECURITY IN COMPUTING		
Code	PGXE4		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Identify some of the factors driving the need for network security	PSO 2	U,AP
CO-2	Identify and classify particular examples of attacks	PSO 2,6	U,AP
CO-3	Define the terms vulnerability, threat and attack	PSO 2	U,AP
CO-4	Identify physical points of vulnerability in simple networks	PSO 3	U, Ap
CO-5	Compare and contrast symmetric and asymmetric encryption systems and theirvulnerability to attack, and explain the characteristics of hybrid systems.	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE V INTERNET OF THINGS		
Code	PGXE5		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the Architectural Overview of IoT.	PSO 2	U,AP
CO-2	Realize the concepts of IoT using Wireless Technologies.	PSO 2,6	U,AP
CO-3	Understand the various IoT Protocols.	PSO 2	U,AP
CO-4	Impart the knowledge on the devices of IoT.	PSO 3	U, Ap
CO-5	Comprehend the idea of M2M.	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE V HUMAN COMPUTER INTERACTION		
Code	PGXE5		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	To stress the importance of good interface design	PSO 2	U,AP
CO-2	To predict good features of interface designs.	PSO 2,6	U,AP
CO-3	To evaluate designs based on theoretical frameworks and methodological approaches.	PSO 2	U,AP
CO-4	To identify and criticize bad features of interface designs.	PSO 3	U, Ap
CO-5	To learn the techniques for prototyping and evaluating user experiences.	PSO 4	U,AP

Course Title	MAJOR BASED ELECTIVE V WEB SERVICES		
Code	PGXE5		
CO No.	**Course Outcomes**	**PSOs Addressed**	**Cognitive Level**
CO-1	Understand the principles of SOA	PSO 2	U,AP
CO-2	Efficiently use market leading environment tools to create and consume web services	PSO 2,6	U,AP
CO-3	Identify and select the appropriate framework components in creation of web servicesolution	PSO 2	U,AP
CO-4	Apply OOP principles to creation of web service solutions	PSO 3	U, Ap
CO-5	Understand to format XML data to the desired format	PSO 4	U,AP