

MANNAI RAJAGOPALASAMY GOVERNMENT ARTS COLLEGE -  
MANNARGUDI-614 001  
THIRUVARUR DISTRICT-INDIA  
(Affiliated to BHARATHIDASAN UNIVERSITY- TIRUCHIRAPPALLI -620024)



2020-21

Programme Outcomes, Programme Specific Outcomes  
and Course Outcomes

## I- B.Sc., COMPUTER SCIENCE(3 Years):

### PROGRAMME OUTCOMES:

<i>PO. No.</i>	<i>Programmes outcomes</i> <i>On completing the B.Sc., Computer Science degree program, the graduates will be able to</i>
<b>PO 1</b>	<b>Enable Graduates to develop logics which will help them to create programs using computer languages.</b>
<b>PO 2</b>	<b>Ensure Graduates with acquired skills and enhanced knowledge will be employable / become entrepreneurs or will pursue higher Education.</b>
<b>PO 3</b>	<b>Graduates with acquired knowledge of modern software tools will be able to contribute effectively as software engineers.</b>
<b>PO 4</b>	<b>Graduates will be able to comprehend the related concepts to Computer Science with Allied papers</b>
<b>PO 5</b>	<b>Graduates will be imbued with ethical values and social concerns to ensure peaceful society.</b>
<b>PO 6</b>	<b>Graduates will be able to comprehend the basic concepts learnt and apply in real life situations with analytical skills.</b>

### PROGRAM SPECIFIC OUTCOME:

<i>PO. No.</i>	<i>Programmes specific outcomes</i> <i>On completing all the courses, the graduates can</i>
<b>PSO 1</b>	<b>Apply basic principles and methods of Computer Science to a wide range of applications.</b>
<b>PSO 2</b>	<b>Students get knowledge and training of technical subjects so that they will be technical professional by learning C programming, Relational Database Management, Data Structure, Software Engineering, Graphics, Java, PHP, Networking, Theoretical Computer Science, System programming, Object Oriented Software Engineering</b>
<b>PSO 3</b>	<b>Impart an understanding of the basics of our computer science discipline.</b>
<b>PSO 4</b>	<b>Apply problem-solving skills and the knowledge of computer science to solve real world problems.</b>
<b>PSO 5</b>	<b>Develop proficiency in the practice of computing</b>

**COURSE OUTCOMES:**

<i>Course code</i>	<i>Title of the course</i>	<i>Course outcomes</i>	<i>Course learning outcomes</i>
<b>16SCCCS1</b>	Programming in C	CO 1	Explain about the basic concepts of programming structure and its syntax.
		CO 2	Explain the various types of arrays, its structure, types of Functions and String handling mechanisms.
		CO 3	Explain the Concepts of structures, Union, Pointers and File handling in C.
<b>16SCCCS1P</b>	PROGRAMMING IN C LAB	CO 1	Explanation of design and algorithmic solution for a given problem.
		CO 2	Construction of flowchart for the computer programs.
		CO 3	Explains the program using Control Statements
		CO 4	Explains the program using Arrays and Functions.
		CO 5	Explain the program using file handling with structure.
<b>16SCCCS2</b>	Object Oriented Programming with C++	CO 1	Explain the top-down and bottom-up programming approach and apply bottom up approach to solve real world problems.
		CO 2	Describe the concept of inheritance and apply real world problems.
		CO 3	Discuss the generic data type for the data type independent programming which relate it to reusability.
		CO 4	Explain to design of handling large data set using File I/O.
<b>16SCCCA2P</b>	PROGRAMMING IN C++ LAB	CO 1	Explain the features of C++ using object oriented programming.
		CO 2	Describe the relative merits of C++ as an object oriented programming language.
		CO 3	Describe the major object-oriented concepts to implement object oriented programs in C++ Using encapsulation and inheritance.
		CO 4	Describe the major object-oriented concepts to implement object oriented programs in C++ Using polymorphism.
		CO 5	Explain the advanced features of C++ specifically stream I/O, templates and operator overloading.
<b>16SCCCS3</b>	Programming in JAVA	CO 1	Explain about basic Java language syntax and semantics to write Java programs.
		CO 2	Describe the concepts of variables, conditional and iterative execution methods etc.
		CO 3	Discuss the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods
		CO 4	Explain the various methodologies to handle the exception mechanisms and the principles of inheritance, packages and interfaces and Threads
		CO 5	Demonstrate the programming concepts for applet and graphics.

<b>16SCCCS3P</b>	Programming in JAVA LAB	CO 1	Explain the programming language design, syntax and semantics.
		CO 2	Describe the critical thinking skills through solving programming problems.
		CO 3	Explain the standard syntax for java programs and other programming Tools.
		CO 4	Describe the animation and events based advanced java program concepts (Applet)
		CO 5	Explain the java programs using object oriented class with parameters, constructors, utility, calculations, methods including inheritance, test classes ,exception handling and Threads
<b>16SCCCS4</b>	Database Systems	CO 1	Describe the fundamentals of File processing and database processing system.
		CO 2	Explain the various data model and its application.
		CO 3	Explain the fundamental concepts of SQL programs.
		CO 4	Explain the various normal forms and its role in DBMS.
		CO 5	Describe the concepts of function, procedure, package, trigger and exception handling.
<b>16SCCCS4P</b>	Database Systems Lab	CO 1	Will understand the fundamental concepts of database.
		CO 2	Will understand user requirements and frame it in data model.
		CO 3	Will understand creations, manipulation and querying of data in databases
		CO 4	Solve real world problems using appropriate set, function, and relational models.
		CO5	Design E-R Model for given requirements and convert the same into database tables.
		CO6	Use SQL. DDL, DML, TCL & PLSQL
<b>16SCCCS5</b>	Data Structures and Algorithms	CO1	To impart the basic concepts of data structures and algorithms
		CO 2	To understand concepts about searching and sorting techniques
		CO 3	To Understand basic concepts about stacks, queues, lists, trees and graphs
		CO 4	To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures
<b>16SCCCS6</b>	Computer Networks	CO1	Explain the local, metropolitan and wide area networks using the Standard OSI reference model.
		CO 2	Discussion of various networking technologies.
		CO 3	Explain the concepts of protocols, network interfaces and design of performance issues in local area networks and wide area networks.
		CO 4	Describe about wireless networking concepts, contemporary issues in networking technologies, network tools and network programming.

		CO 5	Explain the analysis of different types of protocol and the comparison of number of data link, network and transport layer protocols.
<b>16SCCCS7</b>	Digital Electronics and Microprocessors	CO1	To solve problems based on conversion of number systems
		CO 2	To reduce the expression using Boolean theorems
		CO 3	To reduce expressions using K maps in SOP and POS forms
		CO 4	To Understand the operation of all types of Logic Gates, their families etc.
		CO 5	To understand how to use Combinational Logic circuits using Logic Gates and using ICs.
<b>16SCCCS5P</b>	Digital Electronics and Microprocessors	CO1	To identify different components and devices as well as their types.
		CO 2	To understand the use of various measuring Instruments and other devices in the laboratory.
		CO 3	To understand basic parameters associated with each device
		CO 4	To know operation of different instruments used in the laboratory
		CO 5	To connect circuit and do required performance analysis
		CO6	To compare expected and actual results of given particular experiment.
<b>16SMBECS1:1</b>	Software Engineering	CO1	Explain the fundamental knowledge in science, mathematics, fundamentals of computer science, software engineering and multidisciplinary engineering to begin in practice as a software engineer.
		CO 2	Explain to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, manufacturability, sustainability, ethical, health and safety.
		CO 3	Describe the techniques, skills, and modern engineering tools necessary for engineering practice
		CO 4	Explain the early careers will be capable of team and organizational leadership in computing project settings, and have a broad understanding of ethical application of computing-based solutions to societal and organizational problems.
		CO 5	Discuss about analyze, design and manage the development of a computing based system, component or process to meet desired needs within realistic constraints in one or more application domains.
<b>16SCCCS8</b>	Operating Systems	CO 1	Describe the basic components of an operating system and their role in implementations for general purpose, real-time and embedded applications.
		CO 2	Define the concepts of processes, threads, asynchronous signals and competitive system resource allocation.
		CO 3	Explain what multi-tasking is and outline standard scheduling algorithms for Multi-tasking.
		CO 4	Discuss mutual exclusion principles and their use in concurrent programming including semaphore construction and resource allocation.

		CO 5	Expose the details of major operating system concepts, overview of system memory management and the implementation of file systems.
<b>16SCCCS9</b>	Programming in PHP	CO 1	To introduce the importance of PHP in web page design
		CO 2	To understand the features like functions, forms in PHP.
		CO 3	To understand Files, OOPs concepts , Cookies, Sessions and Data base.
		CO 4	To handle requests and draw images on the server with AJAX.
<b>16SCCCS6P</b>	Programming in PHP Lab	CO 1	To understand various methods to handle string and array.
		CO 2	To be aware of the OOPs concepts in PHP.
		CO 3	To know the file handling techniques.
		CO 4	To create database and to manipulate data.
		CO 5	To be familiar with the graphics methods of PHP
<b>16SMBECS2:2</b>	Cloud Computing	CO 1	Ability to identify core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing
		CO 2	Students identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud
		CO 3	Students Identify resource management fundamentals, i.e. resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing
		CO 4	Students will integrate the core issues of cloud computing such as security, privacy, and interoperability
<b>16SCCCS6P</b>	Dot NET Lab	CO 1	Explain the fundamentals of developing modular application by using object oriented methodologies
		CO 2	Discuss about programming environment and configuration for C#.net programs using standard .net controls.
		CO 3	Describe the console applications using C#.NET
		CO 4	Explain the design of web oriented applications using C#.NET
		CO5	Explain the data driven web application, Connecting and managing to data sources.

## II- M.Sc., COMPUTER SCIENCE(2 Years):

### PROGRAMME OUTCOMES:

<i>PO. No.</i>	<i>Programmes outcomes</i> <i>On completing the M.Sc., Computer Science degree program, the graduates will be able to</i>
<b>PO 1</b>	Able to draw upon foundational knowledge, learn, adapt and successfully bring to bear analytical and computational approaches on changing societal and technological challenges.
<b>PO 2</b>	Able to induce and contribute to diverse teams, expertise, and experiences.
<b>PO 3</b>	Drives scientific and societal advancement through technological innovation and entrepreneurship.
<b>PO 4</b>	Is and remains engaged with the academics, technical and scientific professional communities.
<b>PO 5</b>	To equip the students with adequate exposure and skills to empower them to catch a deserving position in the software industry
<b>PO 6</b>	To develop an interest in promoting the use of Computer Science for the positive development of our society and the environment.

### PROGRAM SPECIFIC OUTCOME:

<i>PO. No.</i>	<i>Programmes specific outcomes</i> <i>On completing all the courses, the graduates can</i>
<b>PSO 1</b>	An ability to apply knowledge of computer science appropriate to the disciplin
<b>PSO 2</b>	An ability to apply computer science foundations, algorithmic principles, and computer science theory in the modeling and design of computational systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
<b>PSO 3</b>	Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
<b>PSO 4</b>	Apply computer science theory and software development fundamentals to produce computing-based solutions.
<b>PSO 5</b>	Acquire and apply new knowledge as needed, using appropriate learning strategies.

**COURSE OUTCOMES:**

<i>Course code</i>	<i>Title of the course</i>	<i>Course outcomes</i>	<i>Course learning outcomes</i>
<b>P16CS11</b>	Mathematical Foundation for Computer Science	CO 1	Solve problems on Sets, functions and relations
		CO 2	Describe Linear Algebra and its applications
		CO 3	Analyzing Mathematical logic and Boolean algebra
		CO 4	Solve problems of Probability
		CO 5	Apply Algebraic Structures on various problems
		CO 6	Evaluating Graph Theory
		CO 7	Apply the concepts of graph theory and trees to formulate problem solving
<b>P16CS12</b>	Web Technologies	CO 1	Learn Core-PHP, Server Side Scripting Language
		CO 2	Learn PHP-Database handling.
		CO 3	Learn XML,CSS and XML parsers
		CO 4	Learn different technologies used at client Side Scripting Language
		CO 5	One PHP framework for effective design of web application
		CO 6	Learn JavaScript to program the behavior of web pages.
		CO 7	Learn AJAX to make our application more dynamic.
<b>P16CS13</b>	Design and Analysis of Algorithms	CO 1	Analyze the running time and space complexity of algorithms.
		CO 2	Describe, apply and analyze the complexity of divide and conquer strategy.
		CO 3	Describe, apply and analyze the complexity of greedy strategy.
		CO 4	Describe, apply and analyze the complexity of dynamic programming strategy.
		CO 5	Explain and apply backtracking, branch and bound and string matching techniques to deal with some hard problems
		CO 6	Describe the classes P, NP, and NPComplete and be able to prove that a certain problem is NP-Complete.
		CO 7	Appreciate the role of probability and randomization in the analysis of algorithm
<b>P16CS14</b>	Distributed Operating Systems	CO 1	Describe the principles and concept of Distributed Systems and Distributed Operating Systems.
		CO 2	Identify the challenges and opportunities faced by Distributed Operating Systems.
		CO 3	Discuss the middleware technologies that support distributed applications such as RPC, RMI and object based middleware
		CO 4	Analyze different shared memory architectures
		CO 5	Identify the issues involved in studying process and resource management



		CO 6	Explain about the file organization and management in distributed systems.
		CO 7	Identify the security challenges and control measures in Distributed Operating Systems
P16CS15P	Web Technologies-Lab	CO 1	Developing application to solve real world problems
		CO 2	Implement Simple PHP programs to solve simple problems
		CO 3	Understand the process of designing and implementing Web applications, using PHP.
		CO 4	To understand concept of interoperability.
		CO 5	Apply the knowledge of different web technologies to develop web-based applications
P16CS21	OOAD & UML	CO 1	Specify, analyze and design the use case driven requirements for a particular system.
		CO 2	Model the event driven state of object and transform them into implementation specific layouts.
		CO 3	Identify, Analyze the subsystems, various components and collaborate them interchangeably.
		CO 4	Develop, explore the conceptual model into various scenarios and applications.
		CO 5	Apply the concepts of architectural design for deploying the code for software.
P16CS22	Distributed Computing	CO 1	Students will understand the basic concepts of Distributed computing.
		CO 2	Students will understand how these concepts are used in different project where the data is concern.
		CO 3	Students will understand how to store, manipulate and maintain the data if it is Distributed over multiple sites at time.
		CO 4	Student will understand which is the best as well feasible technique to store data into database.
		CO 5	Student will understand how to recover from the failure by using algorithms, if any occurs.
P16CS23P	Distributed Computing Lab- Practical	CO 1	Verify and analyze the time complexity of the algorithms related to distributed computing.
		CO 2	Design and develop various algorithms for problems in distributed computing
		CO 3	Understand classic distributed algorithms for synchronization, consistency, fault-tolerance, etc.
		CO 4	Understand how modern distributed systems are designed and engineered.
P16CSE1	Any one from Elective List - I		
P16CSE2	Any one from Elective List – II		
P16CS31	Data Mining and Ware Housing	CO 1	Sketch various data warehouse architectures. Explain data mining principles and preprocessing techniques.
		CO 2	Apply classification and clustering algorithms on numeric dataset.

		CO 3	Distinguish web mining algorithms Illustrate spatial and temporal data mining techniques and applications.
<b>P16CS32</b>	Compiler Design	CO 1	To cover the major topics in compiler design with emphasis on solving the problems encountered in designing a compiler regardless of the source language or the target machine.
		CO 2	Describe the utility of different system programs & system tool
		CO 3	Familiarize with the tradeoffs between run-time and compile-time processing (Linking & Loading techniques).
		CO 4	Explore the use of compiler with its phases.
		CO 5	Use of Syntax directed scheme for intermediate code generation.
		CO 6	Construct & use of different compiler tools as LeX, Yacc for code generation & optimization.
<b>P16CS33P</b>	Data Mining Lab –Practical	CO 1	Introduction to Weka Data mining tool
		CO 2	Construct a data mining system using unsupervised algorithms.
		CO 3	Develop a classifier using K-nearest neighbor, decision tree, and neural network algorithm.
		CO 4	Learn how to perform data mining tasks using a data mining toolkit (such as open source WEKA),
		CO 5	Understand the data sets and data pre-processing, Demonstrate the working of algorithms for data mining tasks such as association rule mining, classification, clustering and regression, Exercise the data mining techniques with varied input values for different parameters.
		CO 6	Effective Presentation of solutions to problems by choosing appropriate visualization tools.
<b>P16CSE3</b>	Any one from the Elective List-III		
<b>P16CSE4</b>	Any one from the Elective List – IV		
<b>P16CS41</b>	Cloud Computing	CO 1	Describe architecture and underlying principals of cloud computing
		CO 2	Explain need, types and tolls of virtualization for cloud.
		CO 3	Describe Services Oriented Architecture and various types of cloud services.
		CO 4	Explain Inter cloud resources management cloud storage services and their providers Assess security services and standards for cloud computing.
		CO 5	Analyze advanced cloud technologies.
<b>P16CS42</b>	Wireless Sensor Networks	CO 1	To understand the principles of sensor networks and mobile ad hoc networks, and their impact on protocol design
		CO 2	To understand and develop information dissemination protocols for sensor and mobile networks

		CO 3	Discuss and demonstrate about sensor networks
		CO 4	To develop MAC and routing protocols for sensor and mobile
		CO 5	Demonstrate the Knowledge of routing mechanisms and the three classes of approaches: proactive, on-demand, and hybrid
<b>P16CS43P</b>	Open Source Lab –Practical	CO 1	Understand, analyze and apply the role of languages like HTML, DHTML, CSS, JavaScript and PHP
		CO 2	Analyze a web page and identify its elements and attributes.
		CO 3	Create web pages using HTML, DHTML and Cascading Style Sheets.
		CO 4	Create dynamic web pages using JavaScript, XML.
		CO 5	Build web applications using PHP.
<b>P16CSE5</b>	Any one from the Elective List – V		
<b>P16CSPW</b>	Project	CO 1	Acquire skills to developed the software project.
		CO 2	Understand the software development life cycle.
		CO 3	Formulate clear work plan and procedure
		CO 4	Design and apply modern tools for designing and drafting
		CO 5	Compose and defend report using effective written and visual communication and presentation.

Elective Course List I

<i>Course code</i>	<i>Title of the course</i>	<i>Course outcomes</i>	<i>Course learning outcomes</i>
<b>P16CSE1A</b>	Mobile Computing	CO 1	To make the student understand the concept of mobile computing paradigm, its novel applications and limitations
		CO 2	To understand the typical mobile networking infrastructure through a popular GSM protocol
		CO 3	To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer & Transport Layer -
		CO 4	To understand the database issues in mobile environments & data delivery models.
		CO 5	To understand the ad hoc networks and related concepts. - To understand the platforms and protocols used in mobile environment
		CO 6	To understand the ad hoc networks and related concepts. - To understand the platforms and protocols used in mobile environment
<b>P16CSE1B</b>	Web Services	CO 1	Understand the principles of SOA
		CO 2	Efficiently use market leading environment tools to create and consume web services
		CO 3	Identify and select the appropriate framework components in creation of web service solution
		CO 4	Apply OOP principles to creation of web service solutions
<b>P16CSE1C.</b>	Human Computer Interaction	CO 1	Acquire fundamental concepts of computer components functions regarding interaction with human and vice versa.
		CO 2	Analyze interface problems to recognize what design approach and interaction styles is required in the light of usability standards and guidelines.
		CO 3	Utilize basic concepts to construct a user-interaction strategy for a given problem its usability evaluation and to meet desired needs within realistic constraints such as social, political and ethical norms
		CO 4	Ability to design and develop an interface by using appropriate HCI techniques that are preferred by the user

Elective Course List II

<i>Course code</i>	<i>Title of the course</i>	<i>Course outcomes</i>	<i>Course learning outcomes</i>
<b>P16CSE2A</b>	<b>Embedded Systems</b>	CO 1	Understand the theoretical base of the expert system and its development process.
		CO 2	Differentiate between different knowledge representation techniques and describe methods of knowledge acquisition and extraction.
		CO 3	Describe various learning and planning techniques for different types of expert systems such as neural, fuzzy and real expert system.
		CO 4	Develop expert systems using various available tools. e) Analyze the development process of expert system through various case studies.
<b>P16CSE2B</b>	<b>Artificial Intelligence</b>	CO 1	Understand concept of knowledge representation and predicate logic and transform the real life information in different representation.
		CO 2	Understand state space and its searching strategies.
		CO 3	Understand machine learning concepts and range of problems that can be handled by machine learning.
		CO 4	Understand the numerous applications and huge possibilities in the field of AI
		CO 5	To analyze and formalize the problem as a state space, graph, design heuristics
		CO 6	Ability to represent solutions for various real-life problem domains using logic based techniques
<b>P16CSE2C</b>	<b>Pattern Recognition</b>	CO 1	Summarize the various techniques involved in pattern recognition
		CO 2	Categorize the various pattern recognition techniques into supervised and unsupervised.
		CO 3	Illustrate the artificial neural network based pattern recognition
		CO 4	Discuss the applications of pattern recognition in various applications

Elective Course List III

<i>Course code</i>	<i>Title of the course</i>	<i>Course outcomes</i>	<i>Course learning outcomes</i>
<b>P16CSE3A</b>	<b>Parallel Processing</b>	CO 1	Understand implicit and explicit parallel platform
		CO 2	Decompose given problem into many sub problems using different decomposition techniques
		CO 3	Use different performance metrics for analysis of parallel algorithms
		CO 4	Use message passing library for communication among process running on parallel platform
		CO 5	Develop parallel algorithms for shared address space platform using multithreading
		CO 6	Develop parallel algorithms for tightly coupled and loosely coupled parallel systems for various applications.
<b>P16CSE3B</b>	<b>Advanced Computer Architecture</b>	CO 1	Demonstrate concepts of parallelism in hardware/software
		CO 2	Discuss memory organization and mapping techniques.
		CO 3	Describe architectural features of advanced processors.
		CO 4	Interpret performance of different pipelined processors.
		CO 5	Explain data flow in arithmetic algorithms
		CO 6	Development of software to solve computationally intensive problems.
<b>P16CSE3C</b>	<b>Pervasive Computing</b>	CO 1	To study the pervasive computing and its applications
		CO 2	To study the pervasive computing web based applications
		CO 3	To study voice enabling pervasive computing
		CO 4	To study PDA in pervasive computing
		CO 5	To study user interface issues in pervasive computing

Elective Course List IV

<i>Course code</i>	<i>Title of the course</i>	<i>Course outcomes</i>	<i>Course learning outcomes</i>
<b>P16CSE4A.</b>	<b>Network Security</b>	CO 1	Learn fundamentals of cryptography and its application to network security.
		CO 2	Understand network security threats, security services, and countermeasures.
		CO 3	Acquire background on hash functions; authentication; firewalls; intrusion detection techniques.
		CO 4	Understand various Cryptographic Techniques
		CO 5	Understand vulnerability analysis of network security.
		CO 6	Summarize the intrusion detection and its solutions to overcome the attacks.
		CO 7	Basic concepts of system level security
		CO 8	Apply various public key cryptography techniques
<b>P16CSE4B</b>	<b>Computer Simulation &amp; Modeling</b>	CO 1	Discuss the fundamental elements of discrete-event simulation including statistical models, random processes, random varieties, and inputs to simulation
		CO 2	Analyze a real world problem and apply modeling methodologies to develop a discrete-event simulation model
		CO 3	Recognize the cost/benefits of computer simulation, the generation of meaningful results, decision making, and risks
		CO 4	Interpret and contrast discrete-event techniques for implementing a solution to a simulation problem
		CO 5	Compare and evaluate alternative system designs using sampling and regression
<b>P16CSE4C/P16ITE5C.</b>	<b>Soft Computing</b>	CO 1	Analyze and integrate various soft computing techniques in order to solve problems effectively and efficiently.
		CO 2	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems.
		CO 3	Apply neural networks to pattern classification and regression problems.
		CO 4	Apply genetic algorithms to combinatorial optimization problems.
		CO 5	Apply these techniques in applications which involve perception, reasoning and learning.

Elective Course List V

<i>Course code</i>	<i>Title of the course</i>	<i>Course outcomes</i>	<i>Course learning outcomes</i>
<b>P16CSE5A.</b>	<b>Big Data Analytics</b>	CO 1	Understand Big Data and its analytics in the real world
		CO 2	Analyze the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics
		CO 3	Design of Algorithms to solve Data Intensive Problems using Map Reduce Paradigm
		CO 4	Design and Implementation of Big Data Analytics using pig and spark to solve data intensive problems and to generate analytics
		CO 5	Implement Big Data Activities using Hive
<b>P16CSE5B</b>	<b>MANET</b>	CO 1	Have gained an understanding of the current topics in MANETs and WSNs, both from an industry and research point of views. . .
		CO 2	Have an understanding of the principles of mobile ad hoc networks (MANETs) and what distinguishes them from infrastructure-based networks.
		CO 3	Understand how proactive routing protocols function and their implications on data transmission delay and bandwidth consumption.
<b>P16CSE5C</b>	<b>Digital Image Processing</b>	CO 1	To implement basic and advanced image processing algorithms
		CO 2	To learn about compression and coding schemes.
		CO 3	To learn about different operations on image
		CO 4	To learn related to image operations