MES COLLEGE ERUMELY

PO, PSO & CO

BCA

MES COLLEGE ERUMELY
DEPARTMENT OF COMPUTER SCIENCE
UNDERGRADUATE PROGRAMME - BCA

A. Programme Outcomes

Students of BCA undergraduate degree programmes at the time of graduation will be able to:

PO1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO2	**Problem Solving**: Identify, formulate, conduct investigations, and find solutions to problems based on in-depth knowledge of relevant domains.
PO3	**Communication**: Speak, read, write and listen clearly in person and through electronic media in English/language of the discipline, and make meaning of the world by connecting people, ideas, books, media and technology.
PO4	**Computational Thinking:** Understand data-based reasoning through translation of data into abstract concepts using computing technology-based tools
PO5	**Environment and Sustainability:** Understand the impact of technology and business practices in societal and environmental contexts, and sustainable development
PO6	**Global Perspective:** Understand the economic, social and ecological connections that link the world's nations and people.

B. Programme Specific Outcomes

PSO1	Understand the basics of digital principles and organization of computer system
PSO2	An ability to apply mathematical foundations and computer science theory in software design and implementation

PSO3	An ability to design algorithms , develop programming skills, learn and design automated system or applications
PSO4	Lead the students to get placed in reputed IT firms and organizations.

C. Course Outcomes

Semester I			
Course code	**Course Title**	**Course Outcome**	
EN1CC01	**Fine-tune Your English**	CO1	Understand the basic rules in English grammar
		CO2	Understand the use of English in both written and verbal form.
		CO3	Conceive the ideas of subject-verb agreement in English
		CO4	Develop the ability to write formal and informal letters.
		CO5	Understand the importance of effective usage of English.
		CO6	Understand puns and idioms in English language.
MM1CMT03	**Mathematics**	CO1	Write an argument using logical notation.
		CO2	Explain whether the argument is valid or not.
		CO3	Understand the basic principles of sets and operations in sets .
		CO4	Determine when a function is 1 - 1 and onto .
		CO5	Understand gcd and lcm .
		CO6	Apply the idea of 'modulo' in cryptology .

		CO7	Understand the relations in a set and be able to determine their properties.
		CO8	Represent a relation using digraph , matrix and Hasse Diagram .
ST1CMT 01	**BASIC STATISTICS AND INTRODUCTORY PROBABILITY**	CO1	Organize, manage and present data.
		CO2	Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.
		CO3	Analyze statistical data using measures of central tendency, partition values and dispersion.
		CO4	Analyze statistical data using Boxplot .
		CO5	Understand the basic probability concepts and definitions .
		CO6	Apply additive , multiplicative and Bayes theorems using the terms, independent and mutually exclusive events.
		CO7	Derive the probability density function ,mean variance and moment generating function of discrete and continuous random variables.
A1CRT 01	**Computer Fundamentals and Digital Principles**	CO1	understanding the fundamental concepts used in computer system and also familiarise the parts of computer
		CO2	Understand the concept of operating system,various types of operating system
		CO3	Understand the Basic idea of computer networks along with working of internet and features
		CO4	Understand and examine the structure of various number systems and its application in computation

		CO5	Understand analyse and design different combinational and sequential circuits
		CO6	Familiarize with logic gates and boolean algebra and also simplify boolean expressions using basic boolean properties and Analyse and simplify the canonical expressions using K -Map
		CO7	Understand the basic idea of sequential circuits using flip flops and registers and design the combinational circuits such as MUX,DEMUX, encoder and decoder
		CO8	Obtain the basic level of digital electronics knowledge in Analog and digital circuits
CA1CRT 02	**Methodology of Programming and C Language**	CO1	Understand the basic concepts of Programming languages and its classification,various translators
		CO2	Understand the purpose of program planning develop algorithm , flowcharts and pseudocode
		CO3	Understand the basics of C programming Language, operators and expressions
		CO4	Understand the importance and implementation of Decision and looping statements
		CO5	Understand the basics and implementation of arrays and Strings and pointers
		CO6	Design Programs using functions and understand the concepts of dynamic memory allocation
CA1CRP 01	**Software Lab I**	CO1	Understand the concepts in problem solving
		CO2	Write, compile and debug programs in Language
		CO3	Develop programs using Decision structure, loops, strings, arrays
		CO4	Design programs involving structures, union and pointers.

Semester II			
EN2CC 03	**Issues that Matter**	CO1	Understand the social,political and cultural context of contemporary issues
		CO2	Understand the psychological burden caused by war and its aftermath.
		CO3	Understand the values imparted through the excerpt
		CO4	Evaluate the ecological issues raised by the vulnerability and fragility of the natural resources
		CO5	Formulate clear and accurate opinions on the issues that are relevant
		CO6	Articulate these values in error free English
MM2C MT03	**Discrete Mathematics**	CO1	Understand the basic concepts of Graph theory.
		CO2	Develop models for real life situations using Graph theory.
		CO3	Understand the concepts of trees and tree traversal.
		CO4	Apply tree traversal to data structure.
		CO5	Make use of tree traversal algorithms in logical expressions.
		CO6	Construct Boolean functions and logic gates.
		CO7	Analyse and simplify digital logic circuits by using Boolean algebra.
		CO8	Solve Matrix problems
CA2CRT 03		CO1	Understand the characteristics of Database approach
		CO2	Discuss the relations, relationship models and relational database schemas

	DataBase Management Systems	CO3	Apply the SQL queries
		CO4	Understand the Normalization and Indexing Structures for Files
		CO5	Understand the transaction processing and Database security
CA2CRT 04	**Computer Organization and Architecture**	CO1	Understand the basics of the organization and design of a computer system.
		CO2	Understand the concepts of CPU registers and addressing modes.
		CO3	Learn the instruction classification in detail
		CO4	Learn the computer memory hierarchy and memory mapping techniques..
		CO5	Understand the concepts of parallel computer structure.
		CO6	Understand the concepts of pipelining and vector processing
CA2CRT 05	**Object oriented programming using C++**	CO1	Understand the difference between object oriented and procedure oriented programming and basics and application of C++ programming
		CO2	Learn the concepts of objects and classes
		CO3	Understand and implement constructor and destructor in C++ programming and the concept of polymorphism .
		CO4	Understand different types of inheritance, abstract and virtual base class
		CO5	Understanding pointers and virtual functions and file handling operations in C++
CA2CRP 02	**Software Lab-II**	CO1	Develop solutions for a range of problem using objects and classes
		CO2	Apply object oriented concepts using data encapsulation,inheritance and polymorphism

		CO3	Learn and implement the basic DDl and DML statements
		CO4	Understand and implement basic SQL Queries, set operations and also usage of comparison operator
		CO5	Study and implement complex and nested queries and also creation of stored procedures
Semester III			
ST3CMT32	**Advanced Statistical Methods**	CO1	Understand discrete and continuous statistical distributions.
		CO2	Use discrete statistical distributions to solve statistical problems.
		CO3	Understand the standard normal curves.
		CO4	Evaluate appropriate areas under standard normal curves.
		CO5	Evaluate the point and interval estimators , understand their properties and methods of point estimation.
		CO6	Describe hypothesis testing in general.
		CO7	Conduct hypothesis tests for population mean and population proportion with one sample and two samples.
		CO8	Use Chi-square test for testing Goodness of fit and independence of attributes.
CA3CRT06	**Computer Graphics**	CO1	Understand the concepts of computer graphics and introduction of various display devices
		CO2	Understand how to Generate of Output primitives using various design algorithms
		CO3	Understand the concepts of two dimensional geometric transformations,both basic and composite

		CO4	Understand the window-View port concepts, transformation and also various clipping operations
		CO5	Familiarize with various Three dimensional display methods and object representation
		CO6	Learn motion specifications and design animation sequences
CA3CRT 07	**Microprocessor and PC Hardware**	CO1	Understand the features and architecture of Intel 8085 microprocessor
		CO2	Learn about the instruction set of Intel 8085
		CO3	Understand the basic components of motherboard
		CO4	Learn about I/O bus and system buses
		CO5	Understand harddisk components and features
		CO6	Understand HDD installation procedure
		CO7	Learn the types of memory including physical memory and memory modules
		CO8	Understand the basics of conventional base memory , UMA, HMA , extended and expanded memory
CA3CRT 08	**Operating Systems**	CO1	Learn the basic structure and functions of operating system
		CO2	Understand the basic of process, process scheduling and the associated scheduling algorithms
		CO3	Learn about synchronization , its problems-the critical section and understand deadlock occurrence and recovery
		CO4	Learn various strategies of memory management

		CO5	Understand the concepts of file system in storage management
CA3CRT09	**Data Structure using C++**	CO1	Understand the concept of data structure, dynamic memory allocation and different types of data structures
		CO2	Understand the concepts of array data structure and operations
		CO3	Understand basic data structures such stacks and queues., application of stacks, different types of queues
		CO4	Understand the concept of dynamic data structure and linked list implementation of stack and queue
		CO5	Understand the basic concept of recursion,trees and binary trees
		CO6	Understand different file organization methods
CA3CRP03	**Software Lab III**	CO1	Implement basic data structures such as arrays and linked list.
		CO2	Implementation of various operations on stack and queue
		CO3	Implement various searching and sorting algorithms
		CO4	Demonstrate fundamental algorithmic problems of Tree Traversals
Semester IV			
MM4CMT03	**Operational Research**	CO1	Understand the basics of Operational Research
		CO2	Formulate a real-world problem as a mathematical programming model
		CO3	Understand and solve Linear Programming Problems
		CO4	Solve LPP using Graphical method and Simplex

		CO5	Solve specialized linear programming problems like the transportation and assignment problems
		CO6	Understand and solve Game theory
CA4CRT 10	**Design and Analysis of Algorithms**	CO1	Understand the basic concepts of algorithms, various algorithm design techniques and analyze the performance of algorithms
		CO2	Understand and implement Divide and conquer techniques for searching and sorting methods and estimate complexity
		CO3	Understand Greedy method and solving problems using greedy method
		CO4	Understand Dynamic programming method and solve problems based on the concept of dynamic programming
		CO5	Understand basic traversal and search techniques in trees and graphs
		CO6	Understand backtracking method and solve problems based on the concept of backtracking
CA4CRT 11	**System Analysis & Software Engineering**	CO1	Understand the concept of business information system, its levels
		CO2	Learn the concept of SDL and baseline specifications
		CO3	Understand the basic concepts of software engineering and learn various software life cycle models
		CO4	Plan and implement the life cycle model in their software development
		CO5	Elicit, analyse and specify the software requirements , conduct feasibility study with various stakeholders of the project.
		CO6	Learn various size and cost estimation techniques.
		CO7	Analyse and translate a specification into a design and understand software reliability and quality.

		CO8	Understand the various levels of software testing and to prepare a test case suite .
CA4CRT 12	**Linux Administration**	CO1	Understand the fundamental concepts of open-source operating system Linux
		CO2	Describe Directory & File commands in LINUX
		CO3	Learn the important LINUX library functions and system calls.
		CO4	Learn the Process management commands and their execution.
		CO5	Understand Securing Files in LINUX with access permissions.
		CO6	Understand the basic commands of linux operating system and can write shell scripts
		CO7	Usage of Conditional Execution in Shell Scripts.
		CO8	Apply and change the ownership and file permissions using advanced Unix commands
		CO9	Demonstrate the role and responsibilities of a Linux system administrator.
		CO10	Distinguish various filter and server commands
CA4CRT 13	**Web Programming using PHP**	CO1	Understand the fundamentals of web creation
		CO2	Understand the dynamic nature of web pages using CSS and Javascript
		CO3	Understand the concepts of server side scripting using PHP
		CO4	Understand the basics of PHP functions and object oriented concepts of PHP
		CO5	Learn the relationship between client side and server side scripting language and concepts of MYSQL commands

		CO6	Design web page based on HTML, CSS , JAVASCRIPT and PHP
CA4CRP 04	**Software Lab IV**	CO1	Understand Basic Linux general purpose Commands
		CO2	Learn the syntax and usage of file systems and directory management commands with all options and operate them
		CO3	Create processes background and foreground etc.. exercise interprocess communication and pipes
		CO4	Learn editors, permission advance commands and filters in Linux operating system
		CO5	Perform Shell Programming
		CO6	Design websites using HTML and CSS to demonstrate responsive web design.
		CO7	Develop Javascript based problems
		CO8	Create simple program based on PHP
		CO9	Develop programs using PHP function and MySQL
Semester V			
CA5CRT 14	**Computer Networks**	CO1	Understand scientific applications of signal and networks
		CO2	Understand data communication technologies
		CO3	Understand the underlying principles of data link layer
		CO4	Understand the underlying principles of data communication protocols
		CO5	Analyse the main concepts of communication devices and protocols used in network and transport layers

		CO6	Understand the protocols, applicable to application layer
		CO7	Understand security and vulnerable aspects of computer network
CA5CRT 15	**IT and Environment**	CO1	Understand the importance of Internet in academics
		CO2	Understand the importance of environmental studies
		CO3	Familiarise with various learning management systems and academic services.
		CO4	Know the various aspects of IT industry towards society
		CO5	Promotion of the development of innovative E-waste management techniques
		CO6	Understand human rights in detail both in UN system and in our national perspective
CA5CRT 16	**Java Programming using Linux**	CO1	Acquire the knowledge of OOPS concept used in Java programming language
		CO2	Learn various control statements in Java
		CO3	Understand the concept of constructors , ,super keyword , inheritance , interfaces
		CO4	Learn about API packages and user defined packages
		CO5	Understand various exception handling techniques
		CO6	Learn about event handling swing architecture
		CO7	Learn about applets and JDBC connectivity

CA5OPT	**Informatics and Cyber Ethics (Open Course)**	CO1	Understand the basics of various protocols used in Internet , client server communication and applications of Internet
		CO2	Know the various open access initiatives , academic services like NPTEL, INFLIBNET, NICNET etc.
		CO3	Identify the difference between guarantee and warranty and implement in real models
		CO4	Identify the basics of IPR , plagiarism and patent
		CO5	Get awareness about cyber ethics
		CO6	Know about the cons of cyber activities
CA5CRP 05	**Software Lab V**	CO1	Develop applet and swing programs and implement JDBC connectivity, along with response to events
		CO2	Develop a range of programs from method overloading to multithreading
		CO3	To demonstrate the reusability using inheritance , interface and packages
CA5CRP 06	**Software Development Lab I (Mini Project)**	CO1	Identify the problem and elicit the requirements
		CO2	Analyse and design the project successfully by identifying the hardware and software requirements(PHP and MySQL)
		CO3	Code and test the project
		CO4	Prepare report and present the findings of the study
		CO5	Identify the importance of Responsibility in teamwork
		CO6	Develop confidence in presenting the work

Semester VI			
VICA6CRT17	**Cloud Computing**	CO1	Define Cloud Computing and memorize the different Cloud service and deployment models
		CO2	Understand the fundamental principles of distributed computing.
		CO3	Understand the importance of virtualization in distributed computing and how this has enabled the development of Cloud Computing.
		CO4	Learn the Concept of Cloud Infrastructure Model
		CO5	Understand Cloud Application Platform : Aneka
		CO6	Use and Examine different cloud computing services
CA6CRT18	**Mobile Application development-Android**	CO1	Understand the concepts of Android platform and Android system architecture
		CO2	Understand the concepts of Android Virtual Devices and Layouts
		CO3	Understand the Android user interface
		CO4	Familiarize the different types of user interface tools
		CO5	Understand the Android Activity Life Cycle and services
		CO6	Understand the multimedia concept in Android
		CO7	Understand manipulation of SQLite database in Android
		CO8	Understand Telephoning and messaging in Android
		CO9	Explain XML and JSON data transfer formats
		CO10	Explain Google Play services

CA6PET	**Data Mining (Elective Core)**	CO1	Study the basics of data mining ,data warehouse, classification and prediction
		CO2	Learn about data preprocessing
		CO3	Detailed study about data warehouse and learn the concepts of OLAP technology
		CO4	Understand the association rules
		CO5	Learn the basic and advanced classification methods
		CO6	Learn the basic clustering methods including partitioning ,hierarchical and density based.
		CO7	Understand the mining concepts of complex data
CA6CRP 07	**Software Lab VI & Seminar**	CO1	Installation and configuration of Eclipse and Development Tools
		CO2	Creating simple apps using Interface Tools
		CO3	Creating Android Apps using SQLite
		CO4	Familiarizing with JSON and XML, Creation and distribution of Android Apps.
CA6CRP 07	**Software Lab VI & Seminar**	CO1	Identify and analyse a subject
		CO2	Develop presentation skill
		CO3	Acquire a good manner of putting questions and to answer the questions of other effectives.
CA6CRP 08	**Software Development Lab II (Main Project)**	CO1	Identify the problem and elicit the requirements
		CO2	Analyse and design the project successfully by identifying the hardware and software requirements
		CO3	To code and test the project

		CO4	Prepare report and present the findings of the study
		CO5	Identify the efficiency in completing the project on time
		CO6	Develop confidence in presenting the work
CA6VVT 01	**Viva Voce**	CO1	Acquire soundness of knowledge through various forms of questions
		CO2	Identify and analyse the presence of mind of students

MES COLLEGE ERUMELY

DEPRTMENt OF COMPUTER SCIENCE

POSTGRADUATE DEGREE PROGRAMME - MSc Computer Science

A. Programme Outcomes

PO1: Computing skills and Ethics : to produce effective designs and solutions for specific problems by applying the knowledge of computing.

PO2: Learning and research: Identify , Analyze and Synthesise scholarly literature relating to the field of computer science

PO3 : Social Contribution: Understanding of professional, ethical ,security and social issues and responsibilities

PO4 : Expertise in domain: Deliver computer science concepts , designs and solutions effectively and professionally

B. Programme Specific Outcomes

PSO1: Enrich knowledge in areas like data mining,web services, cloud computing, paradigm of programming language, design and analysis of algorithm, software project management, internet of things and core computing subjects.

PSO2: Be prepared for advanced education in computer science and software engineering.

PSO3: Recognize the importance and possess the skills necessary for life-long learning and students expected to demonstrate the ability to communicate effectively and to work as a team.

PSO4 : Development of analytical skills, acquisition of knowledge and understanding of systems, languages and tools required for effective computation-based problem solving

C. Course Outcomes

Semester I

CA500101 - Computational Mathematics

CO1	UnderstandPropositional Calculus and Predicate Calculus
CO2	Know the use of measures of central tendency and dispersion for analysis of data

CO3	Apply the concept of statistical measures to correlation and regression
CO4	Explain and manipulate the different concepts in automata theory and formal languages such as formal proofs, (non-)deterministic automata, regular expressions, regular languages, context-free grammars, context-free languages,
CO5	Identify and describe Fuzzy Logic and Artificial Neural Network techniques in building intelligent machines

CA010101- Advanced web Technology

CO1	Learn fundamentals of web
CO2	Understand the creation of static webpage using HTML
CO3	Understand the importance of CSS in web development
CO4	Learn the function of JavaScript as a dynamic webpage creating tool
CO5	Distinguish PHP as a server side programming language
CO6	Outline the principles behind using MySQL as a backend DBMS with PHP
CO7	Examine PHP MVC Framework CodeIgniter

CA010102- Operating Systems

CO1	Understand the organization of computer system according to the number of general purpose processors used and know the OS operations
CO2	Understand how OS manage process,memory and storage functions and also learn about different computing environments
CO3	Study the concept of OS services ,system calls and different OS structures.

CO4	Detailed study of process management ,process scheduling and learn the basics of multithreaded programming
CO5	Analyse the critical section problem and its solutions
CO6	Understand the concept of deadlock and study different methods for preventing or avoiding deadlocks in a computer system.
CO7	Detailed study of memory management strategies and virtual memory management .
CO8	Case study , Linux Operating System

CA500102 - Advanced Java Programming

CO1	Understand basic concepts of OOPs in Java
CO2	Understand the concept of constructors and String handling functions
CO3	Understand and develop Packages, Threads, and Handling Exceptions.
CO4	Learn the basic event handling functions and develop GUI Programs
CO5	Learn basics of network, sockets and database connectivity

CA010103 - Lab I [Java & PHP]

CO1	Create static webpage using HTML and CSS
CO2	Implement dynamic web page with validation using JavaScript objects by applying different event handling mechanism
CO3	Develop simple web application using sender side PHP programming and database connectivity using MySQL
CO4	Setup Dreamweaver/NetBeans IDE and working with Simple Database Program
CO5	Learn programs using OOPs concept ,String handling and file handling.

CO6	Learn the programs using Threads and Exception handling.
CO7	Create a full set of UI widgets and other components, using Abstract Windowing Toolkit (AWT) & Swings components.
CO8	Learn to access databases through Java programs, using Java Database Connectivity (JDBC) .

Semester II

CA500201 - Advanced Data Structures

CO1	Understand algorithms and data structures
CO2	The knowledge of arrays, linked lists, stacks and queues
CO3	The knowledge of non linear data structures like trees and graphs
CO4	This knowledge helps in designing efficient algorithms using appropriate data structure.
CO5	The basic knowledge of sorting and searching can be used in solutions to complex problems.
CO6	The knowledge in and asymptotic notations help in designing solutions and analyzing its complexity

CA010201 - Computer Networks

CO1 Understand data communication technologies and layered approach of communication technologies

CO2 Understand different types of networks and how to configure LAN

CO3 Understand the underlying principles of data link layer and communication protocol used in data link layer

CO4 Understand Different types of ethernet , Wireless LANS and Its architecture

CO5 Analyse and implement the main concepts of communication devices

CO6 Understand the main concepts of addressing mechanisms and protocols used in network layer

CO7 Understand different protocols used in network layer and how to configure wireless LANs

CO8 Understand the protocols applicable to the transport layer

CO9 Understand the protocols applicable to the application Layer

CA010202 - Research Methodology and Technical Writing

CO 1 Understand concepts of research and its methodologies

CO 2 Understand criteria of good research.

CO 3 Identify appropriate research topics and developing literature review

CO 4 Develop a research design

CO 5 Understand different model of data collection

CO 6 Understand rules and principles of scientific method

CO 7 Understand how to reporting and thesis writing

CO 8 Understand about research journals and application of IT in research

CO 9 Understand ethical issues in research and publications

CO 10 Understand concept of authorship and copyright

CA500202 - Database Management system and SQL

CO1 Understand the concepts of Database and relational model

CO2 Learn about Relational Algebra , Relational calculus .

CO3 Detailed study about various normal forms

CO4 Learn about relational database query languages.

CO5 Learn about the database manipulation in SQL

CO6 Understand the concepts of deadlock, transaction,database backup and recovery.

CO7 Understand OODBMS concepts and distributed databases.

CA010203 - Lab II [DS using Java, SQL]

CO1 Design and analyze the time and space efficiency of the data structure

CO2 Identity the appropriate data structure for given problem

CO3 Have practical knowledge on the applications of data structures

CO4 Apply the SQL queries

CO5 Apply aggregate , string , date and time functions

CO6 Implement nested queries, join and different operations on a view

Semester III

CA010301 - Digital Image Processing

CO1 Understand the basics and steps of Digital Image Processing .

CO2 Understand the concept of various image enhancement techniques.

CO3 Importance of usage of filters.

CO4 Study about Fourier Transform and DFT

CO5 Implement DFT in Image Smoothing and sharpening.

CO6 Get an idea about different noises, image restoration and compression techniques.

CO7 Understand about image Segmentation and Thresholding

CA800301 - Introduction to Cyber Security

CO1 Understand the basics of computer security and different authentication mechanisms

CO2 Understand different access control mechanisms and Security attacks

CO3 Identify different types malicious code and Email attacks

CO4 Understand the security concerns in Operating system and design security measures for operating systems

CO5 Understand different types of threats occurred in Networks and security measures used in networks

CO6 Understand the basic security requirements of Data bases

CO7 Understand about cyber crimes and Information Technology act related to cyber crimes

CA010302 - Python Programming

CO1 Fundamental concepts of Python and its environments

CO2 Understand about the conditional and control statements in python

CO3 Learn the basics about file and string handling functions and operations

CO4 Learn about List,Tuple and dictionary and various functions

CO5 Learn about packages and Modules and creation of simple Graphics using modules.

CO6 Understanding in deep about File handling operations.

CA500301 - Software Engineering

CO1. Basic knowledge and understanding of the analysis and design of complex systems

CO2. Ability to apply software engineering principles and techniques.

CO3. Ability to develop, maintain and evaluate large-scale software systems.

CO4. Ability to develop efficient, reliable, robust and cost-effective software solutions

CO5. Ability to perform independent research and analysis.

CO6. To communicate and coordinate competently by listening, speaking, reading and writing english for technical and general purposes.

CO7 Ability to work as an effective member or leader of software engineering teams.

CO8 Ability to understand and meet ethical standards and legal responsibilities.

CA010303 - Lab III [DIP using Python]

CO1 Create a range of programs using lists, dictionaries, tuples.

CO2 Implement Functions , Control statements and loops into programs.

CO3 Create programs using class and implement all the OOPs concepts.

CO4 Create programs which support File handling operations

CO5 Usage of modules into the programs.

CO6 To find and display the histogram value.

CO7 Get the knowledge about colour spaces and apply basic intensity transformations.

CO8 To implement 2Dimensional DFT and Transform domain Filtering.

CO9 Understand the importance of various filters and implementation of the same in noisy pictures.

CO10 Create edge detection programs using gradient operators.

CO11 Understand the concept of Image segmentation and Thresholding.

CA010304 - Mini Project using IOT

CO1 Understand advanced programming concepts of python

CO2 Understand the basics of IOT, protocols , standards and communication technologies used in IOT

CO3 Learn about Arduino software development , GPIO programming with Aurduino

CO4 Learn about Different types of sensors devices used in arduino programming

CO5 Learn about raspberry programming in IOT application

CO6 Learn about image processing using Open CV and also understand Cloud deployment models and cloud configurations

CO6 Apply and Develop small projects based on Arduino,raspberry pi, Image processing techniques

CO7 Prepare report and present the findings of the study

CO8 Develop confidence in presenting the work

Semester IV

CA010401 - Data Mining

CO1 Study the basics of data mining and major issues in data mining

CO2 Learn about data warehouse and multidimensional data model

CO3 Learn the concept of data preprocessing

CO4 Detailed study about data preprocessing methods like data integration,data reduction and data transformation,

CO5 Learn the basic concepts and methods of
mining frequent patterns, associations, and correlations

CO6 Learn about classification and classification methods like Bayes classification and rule based classification

CO7 Learn about advanced classification methods like backpropagation

CO8 Understand the basic clustering methods including partitioning ,hierarchical and density based.

CO9 Understand the concept of outlier analysis

CA800402 - Applied Cryptography

CO1 Describe various encryption techniques , the importance of Data Encryption Standard.

CO2 Understand the concept of Advanced Encryption Standard in detail and where it applies.

CO3 Understand the concept of Pseudorandom Number Generators.

CO4 Understand Principles of Public Key Cryptosystems and applications of Cryptographic Hash Functions.

CO5 Understand the concept of Message Authentication Codes and Hash Functions.

CO6 Understand the concept of Key Management and Distribution.

CA800403 - Ethical Hacking

CO1 Understand a vulnerability assessment and penetration test for a network.

CO2 Execute a penetration test using standard hacking tools in an ethical manner.

CO3 Report on the strengths and vulnerabilities of the tested network.

CO4 Identify legal and ethical issues related to vulnerability and penetration testing.

CA010402 - Main Project

CO1 Identify the problem and elicit the requirements

CO2 Analyse and design the project successfully by identifying the hardware and software requirements

CO3 Code and test the project

CO4 Prepare report and present the findings of the study

CO5 Identify the efficiency in completing the project on time

CO6 Develop confidence in presenting the work

CA010403 - Course Viva

CO1 Acquire soundness of knowledge through various forms of questions

CO2 Know the concepts in the areas of study and to know how to relate them to the work

CO3 Identify and analyse the presence of mind of students