OBE Handbook

Department of Computer Applications

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Programme Outcomes (PO)

PO1	Effective Communication	Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology
PO2	Self-directed and Lifelong Learning	Acquire the ability to engage in independent and life-long learning in the context socio-technological changes
PO3	Effective Social Interaction	Elicit views of others, mediate disagreements and help reach conclusions in group settings
PO4	Evaluative 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
PO5	Ideal Citizenship	Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering
PO6	Ethics	Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them
PO7	Environment and Sustainability	Understand the issues of environmental contexts and sustainable development
PO8	Digital Knowledge System	Adequate training in the application of digital knowledge in higher education and workplace

Bachelor of Computer Application (BCA)

Programme Specific Outcome (PSO)

PSO1: Apply knowledge in computer applications to address real-life challenges and provide practical solutions.

PSO2: Demonstrate the ability to analyze, design, develop, and maintain software applications using cutting-edge technologies.

PSO3: Foster employability and entrepreneurial skills, enabling them to create tailored solutions for businesses ranging from small enterprises to large corporations.

PSO4: Utilize skills and knowledge in computing practices, while upholding a strong commitment to social responsibility, ethical conduct, and cybersecurity

Course Outcomes (CO)

Semester 1

CA1CRT01 - Computer Fundamentals and Digital Principles

Understand the fundamental concepts of computers including hardware and software
Explain operating systems, networking, and working of internet
Understand binary, hexadecimal and octal number systems and their arithmetic
Understand how logic circuits and Boolean algebra forms the basics of digital computer
Demonstrate the building up of Sequential and combinational logic from basic gates

CA1CRT02-Methodology of Programming and C Language

Understand the concept of problem solving using computer programs and learn how to write the solution to a problem in the form of algorithm, flowchart and pseudocode.
Understand computer program execution by studying the concepts of compilation, linking, debugging and testing.
Learn the syntax and semantics of C programming language by studying C character set, data types, operators, keywords and control flow.
Develop C programs with conditional and iterative statements and to inscribe C programs that use arrays, user defined functions, pointers, strings, unions and structures.
Understand the mechanisms for efficient storage of data.

CA1CRP01-Software Lab I (Core)

Understand how to compile a C program and produce output
Apply the concepts of loops and decision statements for solving simple problems
Apply the string handling and multidimensional arrays for solving problems
Apply the concepts of functions, pointers and dynamic memory allocation techniques for solving problems
Solve problems using user defined data types

Semester 2

CA2CRT03 - Database Management Systems

Describe the fundamental elements of relational database management systems
Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL
Explain the basic concepts of relational database design and SQL
Improve the database design by normalization and familiar with basic database storage structures and access techniques:
Familiarize with basic transaction processing concepts

CA2CRT04 - Computer Organization and Architecture

Familiarize with basic operational concepts of a computer system
Understand the fundamental organization of CPU.
Explain the memory organization in a computer system.
Understand various parallel computer structures
Compare pipelining and vector processing systems

CA2CRT05 - Object oriented programming using C++

Understand the concept of object oriented programming
Learn the syntax and semantics of C++ programming language and learn how to design C++ classes for code reuse
Understand class member functions, constructors and overloading functions and operator
Learn how containment and inheritance promote code reuse in C++
Understand how inheritance and virtual functions implement dynamic binding with polymorphism

CA2CRP02 - Software Lab- II

Students get practical knowledge on designing and creating relational database systems.
Understand various advanced queries execution such as relational constraints, joins, set operations, aggregate functions, views and procedures.

Implement the concept of C++ classes and objects.
Create simple C++ programs based on the concept of default arguments, function overloading, array of objects and friend functions.
Implement the concept of inheritance and different types of constructors in C++.

Semester 3

CA3CRT06-Computer Graphics

Familiarize with graphics systems and graphics software.
Understand generation of output primitives in terms of line, circle and character drawing algorithms.
Explain 2D geometric transformations and 2D viewing.
Describe 3D display and object representation techniques.
Understand the basics of computer animation.

CA3CRT07 - Microprocessor and PC Hardware

Describe the basic architecture of Intel 8085 microprocessor
Explain instruction Set of Intel 8085 microprocessor
Explain the major components of motherboard
Explain about components, features, operations, installation and formatting of hard disk
Explain about memory modules and memory area

CA3CRT08 - Operating Systems

Understand the basics of operating systems like kernel, shell, types and views of operating systems
Describe Process management and various CPU scheduling algorithms
Understand process synchronization and the concept of Deadlock and its management
Describe the role of paging, segmentation and virtual memory in operating systems
Describe secondary storage management and disk scheduling

CA3CRT09 - Data Structure using C++

Understand the concept of structured data and apply algorithms for solving problems like sorting, searching, insertion and deletion of data in arrays.
Learn basic data structures like linked lists, stacks and queues and explore its applications.

Understand the basic concepts of memory management.
Explore binary trees and binary search trees.
Describe various file organizations, hash function and the concept of collision and its resolution methods.

CA3CRP03 - Software Lab III

Implement C++ programs for insertion, deletion, polynomial addition, searching and sorting in arrays.
Execute C++ programs for implementing stacks and queues.
Implement C++ programs for postfix expression evaluation and conversion of infix to postfix and prefix using stacks.
Create C++ programs for implementing linked lists.
Develop C++ programs for binary search trees and its traversals.

Semester 4

CA4CRT10 - Design and Analysis of Algorithms

Ability to analyze the performance of algorithms
Understand various algorithm design techniques and the ability to adopt the appropriate technique while approaching a problem.
Analyze the divide and conquer strategy and greedy method in problem solving.
Analyze the concept of dynamic programming with the help of various problems.
Understand some graph based concepts and analyze backtracking with suitable examples.

CA4CRT11- System Analysis & Software Engineering

Understand the basics of information systems and importance of system analysis, design and development
Understand the basics of software engineering and different software life cycle models
Understand the basics of requirements engineering, various tools used and elicitation of requirements for the preparation of Software Requirement Specification (SRS) and project planning
Understand the basics of software design principles and standardized system design methods in software development
Understand the basics of software testing and about the verification and validation process involved in the development life cycle

CA4CRT12 - Linux Administration

Understand the architecture of Linux and its associated components
Explain the basic Linux commands
Explain shell programming concepts
Understand the various system administration utilities and concepts
Understand various servers and protocols helpful in system administration task

CA4CRT13 - Web Programming using PHP

Understand the fundamentals of web and the creation of static web page using HTML
Understand the role of of CSS and Javascript in web page development.
Distinguish PHP as a server side scripting language
Familiarize with various PHP functions.
Understand how to use MySQL as a back end DBMS with PHP

CA4CRP04 - Software Lab IV

Show how to use Shell and Vi editor
Apply shell programming concepts for solving simple problems
Show system administration tasks using linux tools
Develop a static web page using HTML,CSS and Javascript
Build a dynamic website using PhP and MySQL

Semester 5

CA5CRT14-Computer Networks

Understand computer networks basics, network architecture, network models such as TCP/IP and OSI Reference models.
Identify and understand various techniques and modes of transmission
Describe data link protocols, multi-channel access protocols and IEEE 802 standards for LAN
Describe the functionalities of network layer and transport layer.
Understand network security and define various protocols such as FTP, HTTP, SMTP, DNS.

CA5CRT15 - IT and Environment

Understand the multidisciplinary nature of environmental studies.
Define biodiversity and understand the important threats to biodiversity.
Understand the internet as a knowledge repository.
Explain the role of IT in society
Understand human rights including its types and role in society.

CA5CRT16 - Java Programming using Linux

Understand platform independent pure object oriented programming paradigm through Java
Understand and apply various object oriented features like data abstraction, encapsulation, polymorphism, inheritance and interfaces to solve various computing problems using Java language
Understand the basics of arrays and strings and the concepts of packages, multithreading and exception handling for effective programming
Apply GUI components in event handling for user friendly program interface
Develop and deploy Applets for internet programming and obtain back-end connectivity using JDBC in Java programming

CA5OPT - Open Course - CA5OPT01-Informatics and Cyber Ethics

Explain the concepts of Internet and its major components
Explain different academic knowledge repositories and the use of use of IT in teaching and learning
Understand the concept of Intellectual property with focus on Information Technology
Understand the concepts of cyber ethics, cyber addictions and cybercrimes
Explain the concepts of e-Waste and Green computing, use of IT in localization and e-Governance

CA5CRP05 -Software Lab V

Write computer programs in Java using object oriented features to solve real world problems
Create interfaces and packages in java
Develop multithreaded applications and handle exceptions in java
Develop GUI applications in Java using Swing components and to create Java applets
Develop Java applications with MySQL as back-end

CA5CRP06 - Software Development Lab I (Mini Project in PHP)

Make the student confident in designing a system based on Software Engineering principles.
Enable the student to develop a dynamic website based on PHP and MySQL.
Strengthen the understanding of programming fundamentals through effective application of theoretical concepts.
Help students to boost skills and widen horizon of thinking.
Build solutions for real world problems.

Semester 6

CA6CRT17 -Cloud Computing

Study the basics of cloud computing and analyze the improved efficiency offered by cloud computing platforms in the modern day computing environment.
Understand the concept of virtualization along with their technologies
Understand cloud computing architecture.
Explore data intensive computation and analyze a cloud application platform, Aneka
Compare various industrial cloud platforms.

CA6CRT18 - Mobile Application development-Android

Understand the various components of Android
Understand the Android Layout and basic User Interface Components
Apply android concepts for building simple mobile applications
Understand the concepts of Activity, service and multimedia architecture
Understand the SQLIte database concepts, JSON Telephony, Wifi and Maps

CA6PET - Elective (Data mining)

Understand the fundamental concepts in data mining.
Understand the difference between operational database and data warehouse.
Explain association rule mining and classification tasks.
Explain clustering and its applications.
Understand mining of data from multimedia databases including text, image,audio, video and www.

CA6CRP07 –Software Lab VI & Seminar

Familiarize with new technologies
Improve presentation skills
Improve discussion skills

Improve oral communication skills
Improve argumentative skills and critical thinking

CA6CRP08 -Software Development Lab II (Main Project)

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|---|
| To acquire practical knowledge on the implementation of programming concepts studied |
| To make the student confident in designing a software project |
| Review the literature and develop solutions for framed problem statement |
| To apply software engineering principles on a real software project |
| Apply, analyze, design and develop the software project. |

PO Calculation
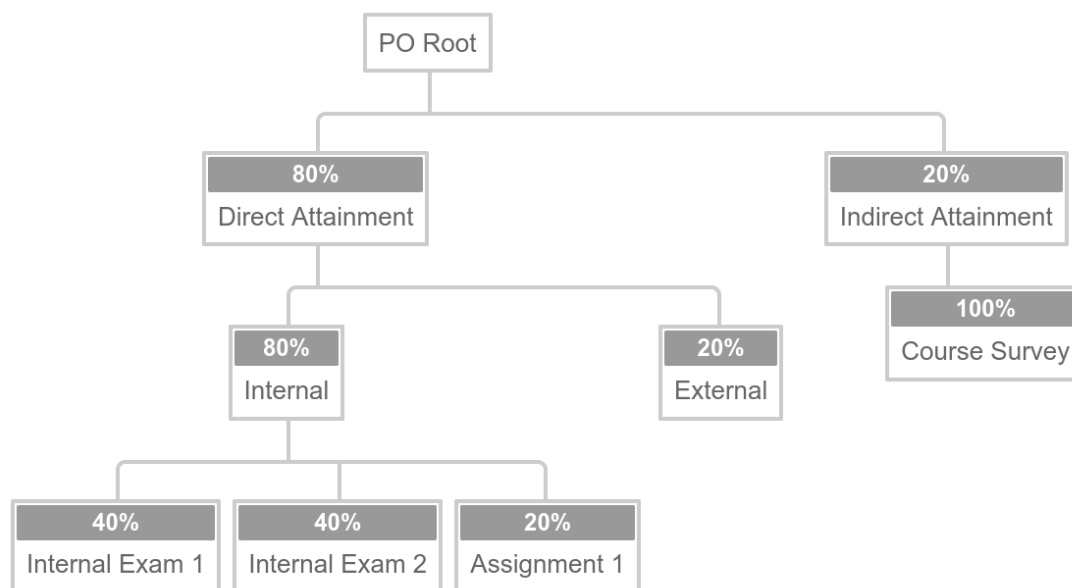
CO1 Average = Sum of CO1 values of all students / No of students
CO1 Attainment Level =(CO1 Average/100) * Max Descriptor