Shikshan Prasarak Mandali Pune-30

PRIN. K.P. MANGALVEDHEKAR INSTITUTE OF MANAGEMENT CAREER DEVELOPMENT AND RESEARCH

Our college is affiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur. Board of Studies of the university design the Program Outcome. The college rigorously follow the Program outcome designed by the university.

Course Outcome: B. C. A. I

Sr. No	Program	Sem	Name of The Course	CO No.	Course Outcome (CO)
1	B.C.A. - I	I	Fundamentals of Computer	CO - 1	To understand basic concepts and terminology of information technology.
				CO - 2	To a basic understanding of personal computers and their operations.
				CO - 3	To understand various input and output devices.
				CO - 4	To understand internet concepts.
2	B.C.A. - I	I	Office Automation	CO - 1	Integrate both graphs and tables created in Microsoft Excel into a laboratory report in Microsoft Word.
				CO - 2	Generate equations, sample calculations, and basic diagrams in Microsoft Word.
				CO - 3	Input experimental data into Microsoft Excel.
				CO - 4	Perform calculations in Microsoft Excel using both manually inputting formulas and built- in Functions.

				CO - 5	Generate simple and effective tables and graphs to describe experimental data in Microsoft Excel.
				CO - 6	Properly format and organize a formal laboratory report in Microsoft Word.
3	B.C.A. - I	I	Programming and Problem Solving using 'C'-I	CO - 1	Able to understand the basic concepts of C programming language.
				CO - 2	Enhance skill on problem solving by constructing algorithms
				CO - 3	Students will be able to comprehend the general structure of C program, concepts of variable, datatype, operator and be able to create a C program to demonstrates these concepts.
				CO - 4	Able to design and develop various programming problems using C programming concepts.
				CO - 5	Understand and use various constructs of the programming language such as conditionals, iteration.
				CO - 6	Demonstrate the use of strings and string handling functions
				CO - 7	Apply skill of identifying appropriate programming constructs for problem solving
4	B.C.A. - I	I	Web Programming-I	CO - 1	Analyze a web page and identify its elements and attributes.
				CO - 2	Create web pages using

					HTML and Cascading Style Sheets.
				CO - 3	Build static web pages using HTML, CSS (Client-side programming).
				CO - 4	Create XML documents and Schemas.
5	B.C.A. - I	I	Basics of Mathematics	CO - 1	To provide overview of theory of discrete objects, starting with relations and partially ordered sets.
				CO - 2	To describe the fundamental counting principle and to determine the number of possible combinations for a given situation using the fundamental counting principle
				CO - 3	Understand the basic principles of sets and operations in sets.
				CO - 4	Prove basic set equalities.
				CO - 5	Demonstrate an understanding of relations able to determine their properties.
6	B.C.A. - I	I	Descriptive Statistics	CO - 1	To prepare frequency distribution and represent it by graphically with the help of tables.
				CO - 2	To compute various measures of central tendency, dispersion and to interpret them.
				CO - 3	To compute correlation coefficient and interpret its value.
				CO - 4	To estimate or predict through linear regression

					method.
7	B.C.A. - I	I	Fundamentals of Electronics	CO - 1	Learn how to develop the Integrated circuits (IC) in electronics systems. E.g. Computer system, Microprocessor, Microcontroller, Mobile etc.
				CO - 2	Learn how to Manufacturing Resistors, Capacitors, Diode and Transistor in IC.
				CO - 3	An understanding of different Display devices, Sensors and PCB technologies used In Computer System.
8	B.C.A. - I	I	Linear Electronics	CO - 1	Learn how to develop and employ circuit models for elementary electronic Components, e.g., resistors, inductors, capacitors, diodes and transistors.
				CO - 2	Gain an intuitive understanding of the role of power flow and energy storage In electronic circuits.
				CO - 3	Learn how to develop different power supplies in computer system.
9	B.C.A. - I	II	Introduction to Python Programming	CO - 1	Understand the features or characteristics of Python.
				CO - 2	Understand the concept of Python Virtual Machine, Python Data types, Command Line Argument, Operators.
				CO - 3	Explore Integrated Development Environment (IDE).
				CO - 4	Do programs using

					conditional control statements and also use the concept of Looping for doing programs.
				CO - 5	Describe the concept of strings, Collection Lists, Tuples and Dictionaries.
10	B.C.A. - I	II	Operating System	CO - 1	Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions, etc.
				CO - 2	To provide a sound understanding of the computer operating system, its structures, and its functioning.
				CO - 3	Analyze Process scheduling algorithms.
				CO - 4	To understand what a process is and how processes are synchronized and scheduled.
11	B.C.A. - I	II	Programming and Problem Solving using 'C'-II	CO - 1	Able to Implement advance C programming concepts like function, pointer, structure and union etc.
				CO - 2	Understand the dynamics of memory by the use of pointers.
				CO - 3	Able to understand the file handling using C Programming language.
				CO - 4	To understand the concept of macros and preprocessor.
12	B.C.A. - I	II	Web	CO - 1	Develop programming skills

			Programming-II		by the use of java script
				CO - 2	Build dynamic web pages using JavaScript (Client-side programming).
				CO - 3	Analyze to Use appropriate client-side applications.
				CO - 4	Build interactive web applications using jQuery.
				CO - 5	Develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management
				CO - 6	Extend this knowledge to .Net Platforms, Java Technologies, Full Stack Development
13	B.C.A. - I	II	Graph Theory	CO - 1	Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving.
				CO - 2	Ability to understand and apply concepts of graph theory in solving real world problem's ability to reason logically.
				CO - 3	Apply the concepts of graph theory in data structure of computer science.
				CO - 4	Give an understanding of graphs and trees which are widely use in software.
14	B.C.A. - I	II	Probability Theory	CO - 1	To distinguish between random and non-random experiments.
				CO - 2	To find the probabilities of the events.
				CO - 3	To apply discrete and

					continuous probability distributions studied in this course in different situations.
15	B.C.A. - I	II	Digital Fundamentals of Computer	CO - 1	Design and constructs logic as well as arithmetical circuits
				CO - 2	Calculate various important parameters of Digital logic families
				CO - 3	Design & analyze combinational logic circuits
				CO - 4	Design & analyze sequential logic circuits
				CO - 5	To Executed 8085 Microprocessor Assembly language programming.
16	B.C.A. - I	II	Introduction to Microprocessor and Interfacing	CO - 1	Design, test and critically evaluate embedded solutions to real world situations using digital components (sequential and combinational).
				CO - 2	Recognize the key features of embedded systems in terms of computer hardware and be able to discuss their functions. You will be aware of the key factors affecting computing hardware evolution.
				CO - 3	Design, test and critically evaluate embedded solutions to real world situations using (embedded) computer systems interfaced to digital hardware

Course Outcome: B. C. A. II

Sr. No	Program	Sem	Name of The Course	CO No.	Course Outcome (CO)
1	B.C.A. - II	III	OOP'S with C++ - I	CO-1	Familiarization with a widely used programming concept – Object Oriented Programming.
				CO-2	Develop logical thinking.
				CO-3	Skill to write codes in C++ by applying concept of OOP, such as Objects, Classes, Constructors, Inheritance etc., to solve mathematical or real-world problems.
				CO-4	Ability to isolate and fix common errors in C++programs
2	B.C.A. - II	III	Data Structures using 'C'-I	CO-1	Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
				CO-2	Describe common applications for arrays, records, linked structures, stacks, queues and trees.
				CO-3	Demonstrate different methods for traversing trees
				CO-4	Compare alternative implementations of data structures with respect to performance.
				CO-5	Discuss the computational efficiency of the principal algorithms for sorting and searching.
3	B.C.A. - II	III	Database Management System	CO-1	Introduce basic concepts and major techniques in DBMS implementations.

				CO-2	Introduce research development ability in databases through technical survey and reading
				CO-3	Explain in detail DBMS architecture.
				CO-4	Explain the principles of concurrency control
				CO-5	Explain the principles of recovery management
4	B.C.A. - II	III	Software Testing & Quality Assurance	CO-1	Gain a broad understanding of the discipline of software Testing and Quality Management.
				CO-2	Understand software test automation problems and solutions.
				CO-3	Comprehend the concepts related to Software Quality Attributes, Quality Planning, Software Quality Control and Software Quality Assurance.
				CO-4	Learn and demonstrate various software evaluation techniques
5	B.C.A. - II	III	Web Development using PHP	CO-1	Create Format cells, rows, columns, and entire worksheets
				CO-2	Understand benefits of PHP as a server-side language
				CO-3	Learn object-oriented programing in PHP
				CO-4	Create and use pivot tables and pivot charts. By learning the course, the students will be able to perform documentation, to perform accounting operations, to

					perform presentation skills
				CO-5	Work with forms and database with MySQL
6	B.C.A. - II	III	Computer Networks	CO-1	Explain the role of protocols in networking
				CO-2	Administer and maintain a computer network.
				CO-3	Demonstrate basic understanding of network principles
				CO-4	Have a good understanding of the OSI Reference Model and in particular have a good knowledge of Layers 1-3.
				CO-5	Demonstrate understanding of how computers communicate
7	B.C.A. - II	III	Financial Accounting with Tally	CO-1	To Understand the basic knowledge of Management Accounting
				CO-2	To learn the entry's and reading of journal, ledger etc.
				CO-3	To know the basics of depreciation, bank reconciliation statement etc.
8	B.C.A.- II	IV	OOPS with C++-II	CO-1	Define the dynamic memory management techniques.
				CO-2	Describe the concept of polymorphism.
				CO-3	Associate the usage of exception handling.
9	B.C.A.- II	IV	Data structures using ‘C’- II	CO-1	To learn the applications of searching and sorting and to write the programs
				CO-2	To learn the applications of Trees and graphs
				CO-3	To write the beginner level programs of Trees and

					Graphs
10	B.C.A.-II	IV	Relational Database MySQL	CO-1	To understand the basics of MySQL environment
				CO-2	To implement the concept of join, view in my SQL
				CO-3	To implement the concept of curser in my SQL
11	B.C.A.-II	IV	Ethics and Cyber law	CO-1	To understand the basics of cyber crime
				CO-2	To understand the basics of hacking and ethical hacking
				CO-3	To understand the types of attacks
12	B.C.A.-II	IV	Angular JS	CO-1	To understand the basics of scripting
				CO-2	To be able to write the preliminary level programs using Angular JS
				CO-3	To learn the applicability of its in web site and web application development
13	B.C.A.-II	IV	Advance Computer Networks	CO-1	To understand the basics of advanced concepts in networking with firewall and different protocols
				CO-2	To know the basics of different network services
14	B.C.A.-II	IV	Basics of Python Programming	CO-1	Understand the features python program
				CO-2	Comprehend Performing Assignment and arithmetic operations
				CO-3	Learn Precedence of operators
				CO-4	Learn functions and modules of python
				CO-5	Learn formal parameters, actual and function parameters

Course Outcome: B. C. A. III

Sr. No.	Program	Sem	Name of The Course	CO No.	Course Outcome (CO)
1	B.C.A. - III	V	Core Java	CO - 1	Understand the features of Java and the architecture of JVM
				CO - 2	Write, compile, and execute Java programs that may include basic data types and control flow constructs and how type casting is done
				CO - 3	Identify classes, objects, members of a class and relationships among them needed for a specific problem and demonstrate the concepts of polymorphism and inheritance
				CO - 4	The students will be able to demonstrate programs based on interfaces and threads.
				CO - 5	Write, compile, execute Java programs that include GUIs and event driven programming and also programs based on files
				CO - 6	Learn to access database through Java programs, using Java Data Base Connectivity (JDBC)
2	B.C.A. - III	V	Visual Programming	CO - 1	Understand code solutions and compile C# projects within the .NET framework.
				CO - 2	Design and develop professional console and window-based .NET

					application
				CO - 3	Demonstrate knowledge of object-oriented concepts Design user experience and functional requirements C#.NET application.
				CO - 4	Construct classes, methods, and assessors, and instantiate objects.
				CO - 5	Understand and implement string manipulation, events and exception handling within .NET application environment.
				CO - 6	Create and manipulate GUI components in C#.
				CO - 7	Design and Implement Windows Applications using Windows Forms, Control Library, Advanced UI Programming & Data Binding concepts
				CO - 8	Design and Implement database connectivity using ADO.NET in window-based application.
3	B.C.A. - III	V	Computer Graphics	CO - 1	The main objective of this module is to introduce to the students the concepts of computer graphics.
				CO - 2	Various applications, areas, and graphics displays and hardcopy technologies.
				CO - 3	Demonstrate the overview of graphics system and make use of various drawing algorithms of output primitives

				CO - 4	Apply and compare the algorithms for drawing 2D images also explain aliasing, anti-aliasing and half toning techniques.
				CO - 5	Experiment with the geometric transformations and different algorithms for viewing and clipping in two-dimensional graphics related problems.
				CO - 6	Solve the problems on viewing transformations and explain the projection and hidden surface removal algorithms.
4	B.C.A. - III	V	Recent Trends in IT	CO - 1	It begins by providing an overview of recent trends in the access and use of new technologies as well as a summary of online opportunities and risks.
				CO - 2	Pursue advanced knowledge and professional development in the field of information technology.
				CO - 3	It then explores a variety of factors, including economic, social and cultural status which underlie these trends and lead to online and offline inequalities.
				CO - 4	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the

					limitations.
				CO - 5	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. Unit No.
5	B.C.A. - III	V	Linux & Shell Programming	CO - 1	To provide introduction to Linux Operating System and its File System.
				CO - 2	To develop the ability to formulate Regular Expressions and use them for Pattern Matching
				CO - 3	Understand the Linux commands
				CO - 4	To acquire skills shell programming
				CO - 5	To implement various system calls.
				CO - 6	To learn basics concepts of system administration, networking
6	B.C.A. - III	VI	Advanced Java	CO - 1	Create dynamic web pages, using Servlets and JSP. Make a reusable software component, using Java Bean.
				CO - 2	Develop Stateful, Stateless and Entity Beans. Use Struts frameworks, which give the opportunity to reuse the codes for quick development. Map Java

					classes and object associations to relational database tables with Hibernate mapping files.
7	B.C.A. - III	VI	Dot Net Technology	CO - 1	Understand web concepts and features of ASP.NET
				CO - 2	Implement web applications using various ASP.NET controls
				CO - 3	Implement web applications using ASP.NET MVC
				CO - 4	Set up various navigation techniques for integrating web pages within the site.
				CO - 5	Create the dynamic web page using ASP.NET Controls which interact with databases.
				CO - 6	Manage cookies and sessions as state management techniques.
				CO - 7	Advanced concepts related to Web Services, WCF and WPF in project development
8	B.C.A. - III	VI	Data Warehouse and Data Mining	CO - 1	Identify the scope and necessity of Data Mining & Warehousing for the society
				CO - 2	To understand various tools of Data Mining and their techniques to solve the real time problems.
				CO - 3	Pre-process the data for mining applications
				CO - 4	Apply the association rules for mining the data
				CO - 5	Design and deploy appropriate classification techniques

				CO - 6	Cluster the high dimensional data for better organization of the data
				CO - 7	Evaluate various mining techniques on complex data objects
9	B.C.A. - III	VI	Cryptography and Network Security	CO - 1	Illustrate the principles of number theory and compare various cryptographic techniques.
				CO - 2	Demonstrate how Block Ciphers such as DES, AES, Triple DES, RC5 and public key crypto-systems are implemented.
				CO - 3	Apply hash function and digital signatures to implement authentication protocols
				CO - 4	Illustrate the role of firewall in implementing trusted systems
				CO - 5	Analyze how applications can be secured
10	B.C.A. - III	VI	Advanced Python	CO - 1	Students should be made familiar with the concepts of GUI controls and designing GUI applications.
				CO - 2	To develop the web applications
				CO - 3	Understanding the XML Concepts
				CO - 4	To understand and implement the concept of networking in Python

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PRIN. K.P. MANGALVEDHEKAR INSTITUTE OF MANAGEMENT CAREER DEVELOPMENT AND RESEARCH

Program Outcome: B. C. A.

Program		Program Outcome
B. C. A. (Three Years Bachelor's Degree Program)	PO1	Design and develop software-based solutions for real life problems, serving effectively to the requirements of computer field and Society.
	PO2	Attain sufficient knowledge related to computer domains, possesses technical, soft and hard skills and apply them effectively in team work.
	PO3	Ability to link knowledge of Computer Science with other two chosen auxiliary disciplines of study.
	PO4	Display ethical code of conduct in the usage of Internet and Cyber systems.
	PO5	Ability to pursue higher studies of specialization and to take up technical employment.
	PO6	Identify, formulate and analyze complex real-life problems in order to arrive at computationally viable conclusions using fundamentals of mathematics, computer sciences, management and relevant domain disciplines.
	PO7	Ability to operate, manage, deploy, configure computer network, hardware, and software operation of an organization.
	PO8	Apply standard Software Engineering practices and strategies in real-time software

		project development.
	PO9	Design and develop computer programs/computer -based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics.
	PO10	Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems
	PO11	The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem.
	PO12	The ability to work independently on a substantial software project and as an effective team member.

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Program Specific Outcome: B. C. A.

Program		Program Outcome
B. C. A. (Three Years Bachelor's Degree Program)		After the completion of three years of Bachelor in Computer Application that is B. C. A. The students will be able to:
	PSO-1	Demonstrate the ability to adapt to technological changes and innovations in the discipline.
	PSO-2	Develop computer programs using functional programming and object-oriented programming paradigms.
	PSO-3	To use professional skills related to Software Industry.
	PSO-4	To prepare the necessary knowledge base for research and development in Computer Science.
	PSO-5	To build-up a successful career in Computer Science and to produce entrepreneurs who can innovate and develop software products.
	PSO-6	To apply knowledge of mathematics, statistics and computer science in practice.
	PSO-7	To enhance not only a comprehensive understanding of the theory but its application too in diverse fields.

	PSO-8	To prepare himself/herself for a range of computer applications, computer organization, techniques of Computer Networking, Software Engineering, Web Development, Database management and Advance Java.
	PSO-9	To design a computing system to meet desired needs within realistic constraints such as safety, security and applicability in multidisciplinary teams with a positive attitude.
	PSO-10	To develop projects of different application areas