B. L. D. E. Association's

S. B. Arts & K. C. P. Science College,

Vijayapur

B.C.A. Programme

Program Outcome

Course Outcome

&

Mapping

(A.Y. 2023-24)

B.C.A Programme

PROGRAM OUTCOMES

POs	DESCRIPTIONS
PO1:	**Disciplinary Knowledge:** Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity.
PO2:	**Problem Solving:** Improved reasoning with strong mathematical ability to indentify ,formulate and analyse problems related to computer science and exhibiting a sound knowledge on data structure and algorithms.
PO3:	**Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems. Establishing excellent skills in applying various design strategies for solving complex problems.
PO4:	**Programming a Computer:** Exhibiting strong skills required to program a computer for various issues and problems of day-to-day applications with thorough knowledge on programming languages of various levels.
PO5:	**Application System Knowledge:** Possessing a sound knowledge on computer application software and ability to design and develop app for applicative problems.
PO6:	**Modern Tool Usage:** Identify, select and use a modern scientific and IT tool or techniques for modeling ,prediction, data analysis and solving problems in the area of Computer Science and making them mobile based application software.

PO7:	**Communication:** Must have a reasonably good communication knowledge both in oral and writing.
PO8:	**Project Management:** Practicing of existing projects and becoming independent to launch own project by identifying a gap in solutions.
PO9:	**Ethics on Profession, Environment and Society:** Exhibiting professional ethics to maintain the integrality in working environment and also have concern on societal impacts due to computer-based solutions for problems.
PO10:	**Lifelong Learning:** Should become an independent learner so, learn to learn ability.
PO11:	**Motivation to take up Higher Studies:** Inspiration to continue educations towards advanced studies on Computer Science

By the end of the program the students will be able to :Outcome Based Education.

1. Apply standard Software Engineering practices and strategies in real-time software project development.
2. Design and develop computer programs /computer-based systems in the areas related to AI, algorithms, networking, web design, cloud computing , IOT and data analytics.
3. Acquaint with the contemporary trends in industrial/research settings and thereby innovative novel solutions to existing problems.
4. The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem.
5. Knowledge of Programming through Practical's.
6. The ability to work independently on a substantial software project and as an effective team member.

Course outcomes

Course	Course Code/Course Title	Course Outcomes	DESCRIPTIONS
B.C.A I SEM	21BCA1C2L/ Fundamentals of Computers		At the end of the course the student should be able to
		CO1	**Create an awareness** of computers its classification and anatomy.
		CO2	**Understand** Number System, computer languages and the steps for problem solving.
		CO3	**Understand** the fundamentals of operating system and basic commands.
		CO4	**Understand** the basic concepts of DBMS and Internet.
	21BCA1C1L/ Programming in C	CO1	**Read, understand** and trace the execution of programs written in C language.
		CO2	**Apply** programming control structures for a given problem to create C code.
		CO3	**Understand** derived data types and develop C code using arrays/strings.
		CO4	**Understand** user defined functions and data types to develop C code.
	21BCA1C3LMF /Mathematical Foundation	CO1	**Study** and solve problems related to connectives, predicates and quantifiers under different situations.
		CO2	**Develop** basic knowledge of matrices and to solve equations using Cramer's rule.
		CO3	**Know** the concept of Eigen value.
		CO4	**Develop** the knowledge about derivatives and know various applications of differentiation.
		CO5	**Understand** the basic concepts of Mathematical reasoning, set.

	21BCA1C3L/AC /Accountancy	CO1	**Study** and understand Accounting, Systems of Book, Branches of accounting advantage and limitations
		CO2	**Know** the concept of accounting, financial accounting process and journalization.
		CO3	**Maintenance** different account book and reconciliations.
		CO4	**Preparations** of different bills and trial balance.
B.C.A II SEM	21BCA2C4L/ Data structures using C	CO1	**Understand** the classification of data structures and dynamic memory allocation .
		CO2	**Understand** the difference between iteration and recursion and apply recursive definition for problem solving.
		CO3	**Understand** and evaluate the applications of stacks and queues .
		CO4	**Understand** and evaluate the applications of linked list and tree.
B.C.A II SEM	21BCA2C5L/ Object Oriented Programming with JAVA	CO1	**Understand** the features of java and he architecture of JVM..
		CO2	**Write, compile and execute** java programs that may include basic data types and control flow constructs and how type casting is done.
		CO3	**Identify** classes, objects , members of a class and relationships the among them needed for a specific problem and demonstrate the concepts of polymorphism and inheritance.
		CO4	**Demonstrate** programs based on interfaces and threads and explain the benefits of JAVA's exceptional handling mechanism compared to other Programming language.
		CO5	**Write, compile and execute** java programs that include GUIs and event driven programming and also programs based on files.

B.C.A II SEM	21BCA2C6L/ Discrete Mathematics	CO1	**Understand** the basic concepts of Mathematical reasoning, set and functions.
		CO2	**Understand** various counting techniques and principle of inclusion and executions .
		CO3	Equivalence relations.
		CO4	**Apply** the concepts of generating functions to solve the recurrence relations.
		CO5	**Familiarize** the fundamental concept of graph theory and shortest path algorithm.
B.C.A III SEM	21BCA3C7L/ Database management System	CO1	**Explain** the various database concepts and the need for database systems.
		CO2	**Identify** and define database objects, enforce integrity constraints on a database using DBMS.
		CO3	**Demonstrate** a Data model and Schemas in RDBMS.
		CO4	**Convert** an ER Diagram to a database schema and deduce it to the desired normal form.
		CO5	**Formulate** queries in Relation algebra, Structures Query language(SQL) for database manipulation.
		CO6	**Explain** the transaction processing and concurrency control techniques.
B.C.A III SEM	21BCA3C8L/C# and Dot Net Framework	CO1	**Describe** Object Oriented Programming concepts like Inheritance and Polymorphism in C# programming language.
		CO2	**Interpret** and Develop Interfaces for real-time applications.
		CO3	**Build** custom collections and generics in C#.

B.C.A III SEM	21BCA3C9L/ Computer Communication and Networks	CO1	**Explain** the transmission technique of digital data between two or more computers and a computer network that allows computers to exchange data.
		CO2	**Apply** the basics of data communication and various types of computer networks in real world applications.
		CO3	**Compare** the different layers of protocols.
		CO4	**Compare** the key networking protocols and their hierarchical relationship in the conceptual model like TCP/IP and OSI.
B.C.A IV SEM	21BCA4C10L/ Python Programming	CO1	**Explain** the basic concepts of Python Programming.
		CO2	**Demonstrate** proficiency in the handling of loops and creation of functions.
		CO3	**Identify** the methods to create and manipulate lists, tuples and dictionaries.
		CO4	**Discover** the commonly used operations involving file handling.
		CO5	**Interpret** the concepts of Object-Oriented Programming as used in Python.
		CO6	**Develop** the emerging applications of relevant fields using Python.
	21BCA4C11L/ Computer Multimedia and Animation	CO1	**Write** a well-designed, interactive Web site with respect to current standards and practices.
		CO2	**Demonstrate** in-depth knowledge of an industry-standard multimedia development tool and its associated scripting language.
		CO3	**Determine** the appropriate use of interactive versus standalone Web applications.
	21BCA4C12L/ Operating System Concepts	CO1	**Explain** the fundamentals of the operating system.
		CO2	**Comprehend** multithreaded programming, process management, process synchronization, memory management and storage management.
		CO3	**Compare** the performance of Scheduling Algorithms.
		CO4	**Identify** the features of I/O and File handling methods.

B.C.A V Sem	21BCA5C13L/ Design & Analysis of Algorithms	CO1	**Understanding:** Understand the fundamental concepts of algorithms and their complexity, including time and space complexity, worst-case and averagecase analysis, and Big-O notation. BL (L1, L2).
		CO2	**Problem Solving:** Design algorithms for solving various types of problems, such as Sorting, Searching, Graph traversal, Decrease-and-Conquer, Divide-and-Conquer and Greedy Techniques. BL (L1, L2, L3).
		CO3	**Analysis:** Analyze and compare the time and space complexity of algorithms with other algorithmic techniques. BL (L1, L2,L3,L4) C.
		CO4	**Performance of techniques:** Evaluate the performance of Sorting, Searching, Graph traversal, Decrease-and-Conquer, Divide-andConquer and Greedy Techniques using empirical testing and benchmarking, and identify their limitations and potential improvements. BL (L1, L2, L3, L4).
		CO5	**Applications:** Apply various algorithm design to real-world problems and evaluate their effectiveness and efficiency in solving them. BL (L1, L2, L3).
B.C.A V Sem	21BCA5C14L/ Statistical Computing and R Programming	CO1	**Introduction:** Explore fundamentals of statistical analysis in R environment.
		CO2	**Techniques:** Describe key terminologies, concepts and .techniques employed in Statistical Analysis.
		CO3	**Problem solving Methods:** Define Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
		CO4	**Methods:** Conduct and interpret a variety of Hypothesis Tests to aid Decision Making.
		CO5	**Analysis Methods:** Understand, Analyse, and Interpret Correlation Probability and Regression to analyse the underlying relationships between different variables.

B.C.A V Sem	21BCA5C15L/ Software Engineering	CO1	**Introduction:** How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.
		CO2	**Knowledge:** An ability to work in one or more significant application domains.
		CO3	**Skills** :Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
		CO4	**Models:** Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.
		CO5	**Techniques:** Demonstrate an ability to use the techniques and tools necessary for engineering practice.
B.C.A V Sem	21BCA5DE1BL/ Cloud Computing	CO1	**fundamentals:** Explain the core concepts of the cloud computing paradigm such as how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
		CO2	**Understanding:** Apply the fundamental concepts in data centres to understand the trade-offs in power, efficiency and cost.
		CO3	**Knowledge:** Identify resource management fundamentals like resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing.
		CO4	**Problem solving methods:** Analyze various cloud programming models and apply them to solve problems on the cloud.

B.C.A V Sem	21BCA5VC1AL/ Digital Marketing	CO1	**Introduction:** Understand the fundamental concepts and principles of digital marketing.
		CO2	**Developing skills:** Develop practical skills to implement various digital marketing strategies and techniques.
		CO3	**Ability to analyze :** Analyze and evaluate the effectiveness of digital marketing campaigns.
		CO4	**Learning Critical thinking:** Apply critical thinking and problem-solving skills to real-world digital marketing scenarios.
		CO5	**Enhancing Knowledge:** Create comprehensive digital marketing plans and strategies.
B.C.A VI Sem	21BCA6C16L / PHP and MySQL	CO1	**Understanding:** Design dynamic and interactive web pages and websites.
		CO2	**Skills:** Run PHP scripts on the server and retrieve results.
		CO3	**Practical Applications:** Handle databases like MySQL using PHP in Website.
	21BCA6C17L / Artificial Intelligence and Applications	CO1	**Knowledge:** Students will able to develop semantic-based and context-aware systems and use the knowledge embedded in multimedia content.
		CO2	**Interpretation methods:** Students will achieve semantic interoperability between Web resources and services.
		CO3	**Understanding of Robotics :** Students are understand the field of Robotics is a multi disciplinary.
	21BCA6DE2AL/ Fundamentals of Data Science	CO1	**Understanding:** Understand the concepts of data and pre-processing of data.
		CO2	**Methods:** Know simple pattern recognition methods.
		CO3	**Concepts:** Understand the basic concepts of Clustering and Classification.
		CO4	**Real time techniques:** Know the recent trends in Data Science.

B.C.A VI Sem	21BCA6VC2AL/ Web Content Management System	CO1	**Introduction:** Understand content development basics.
		CO2	**Knowledge of Tools:** Gain Knowledge of tools for multimedia content development for audio/ video, graphics, animations, presentations, screen casting.
		CO3	**Development Techniques:** Host websites and develop content for social media platforms such as wiki and blog.
		CO4	**Understanding of Application:** Understand e-publications and virtual reality.
		CO5	**Real time Applications:** Use of e-learning platform Moodle and CMS applications Drupal and Joomla.
	Project Work	CO1	**Introduction:** analysis, design of project requirements
		CO2	**Coding:** Implementation and evaluation of project
		CO3	**Skill enhancement:** communication, and modeling the description

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