



KARNATAKA STATE AKKAMAHADEVI WOMEN'S UNIVERSITY, VIJAYAPURA.

DEPT. OF COMPUTER SCIENCE

SI No. KSAWUV/DCS/2021-22/

Date: 22-12-2021

**MASTER OF COMPUTER APPLICATIONS (MCA) FOR THE ACADEMIC
YEAR 2015-16**

Programme Outcome(PO):

On completion of MCA degree, the graduates will be able to:

PO1:Apply the knowledge of mathematics and computing fundamentals to various real life applications for any given requirement.

PO2:Design and develop applications to analyze and solve all computer science related problems

PO3:Design applications for any desired needs with appropriate considerations for any specific need on societal and environmental aspects.

PO4:Analyze and review literatures to invoke the research skills to design, interpret and make inferences from the resulting data.

PO5:Integrate and apply efficiently the contemporary IT tools to all computer applications.

PO6:Solve and work with a professional context pertaining to ethics, social, cultural and cyber regulations.

PO7:Involve in perennial learning for a continued career development and progress as a computer professional.

PO8:Function effectively both as a team leader and team member on multidisciplinary projects to demonstrate computing and management skills.

PO9:Communicate effectively and present technical information in oral and written reports.

PO10:Utilize the computing knowledge efficiently in projects with concern for societal, environmental, and cultural aspects.

PO11:Function competently as an individual and as a leader in multidisciplinary projects.

PO12: Create and design innovative methodologies to solve complex problems for the betterment of the society.

PO13: Apply the inherent skills with absolute focus to function as an successful entrepreneur.

Programme Specific Outcome(PSO):

On completion of the Master of Computer Applications degree, the graduates will be able to

PSO1: Design, develop and implement interdisciplinary application software projects to meet the demands of industry requirements using modern tools and technologies.

PSO2: Analyze the societal needs to provide novel solutions through technological based research.

PSO3: Apply the knowledge of computer application to find solutions for real-life application.

PSO4: Ability to analyze, design, develop and maintain the software application with latest technologies.

PSO5: Utilize skills and knowledge for computing practice with commitment on social, ethical, cyber and legal values.

PSO6: Inculcate employability and entrepreneur skills among students who can develop customized solutions for small to large Enterprises.

Course Outcomes (CO):

CourseCode	CourseName	CourseOutcomes
MCA I Semester:		
1 MCA. 1.1	Problem Solving Using C	<ul style="list-style-type: none">• Problem-solving through programming• Programming language, programming, reading a set of Data, stepwise refinement, concepts of Loops, Functions, Control structure, Arrays, Structure, Pointer and File concept.• To build efficient programs in „C“ language essential for future programming and software engineering courses.
1 MCA. 1.2	Accounting And Financial Management	<ul style="list-style-type: none">• Know and apply accounting and finance theory.• Explain and apply international accounting standards.• Critically evaluate financial statement information.• Evaluate and compare different investments.

1 MCA. 1.3	Digital Logic and Computer Design	<ul style="list-style-type: none"> • The Conversion Among Different Number Systems; Familiar with Basic Logic Gates, Build Simple Logic Circuits Using Basic Gates. • Students Will Be Able to Design Combinational and Sequential Circuits Using Discrete Components, Use Basic Structural Hardware Description Languages to Implement Digital Circuits, Design and Conduct Experiments Related to Digital Systems and To Analyze Their Outcomes. • Students Will Gain Understanding of Basic Organization of Computer System.
1 MCA. 1.4	Discrete Mathematical Structures	<ul style="list-style-type: none"> • Students Completing This Course Will Have Understanding Of The Computational And Algorithmic Aspects Of Sets, Relations, Mathematical Logic, Boolean Algebra, Graphs, Trees And Algebraic Structure In The Field Of Computer Sciences And Its Applications. • Able To Apply Them In Problem Solving
1 MCA. 1.5	Unix And Shell Programming	<ul style="list-style-type: none"> • The students completing this course will be understands UNIX Operating system features • Will be able to do shell programming in UNIX environment. • Understand and handle UNIX system calls. • Understand filters using Regular Expression: grep & sed grep. • Ability to use Vi editor and Awk programming to solve programming problems.
1 MCA 1.6	C- Programming and Unix Lab	<ul style="list-style-type: none"> • Student will be able to run various UNIX commands on a standard UNIX/LINUX Operating system (We will be using Ubuntu flavor of the Linux operating system). • Student will be able to run C / C++ programs on UNIX. • Student You will be able to do shell programming on UNIX OS. • Student will be able to understand and handle UNIX system calls.

1 MCA 1.7	Digital Electronics Lab	<ul style="list-style-type: none"> • Hands-on experiments to study logic gates and realization of OR, AND, NOT AND XOR Functions using universal gates. • Understand the relationships between combination logic and Boolean algebra, and between sequential logic and finite state machines; • Ability to design and implement combinational circuits like half adder/full adder, half subtractor/full subtractor, code converters, comparators, MUX/DEMUX c). • Design and implement sequential circuits like flip-flops, counters and shift registers d) Study of 8-bit DAC and 8-bit ADC
MCA II Semester:		
1 MCA 2.1	Operating System	<ul style="list-style-type: none"> • Students will be able explain the structure of OS and basic architectural components involved in OS design • Able to analyze and design the applications to run in parallel either using process or thread models of OS. • Analyze the various device and resource management techniques in time sharing and distributed environment. • Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system. • Interpret the mechanisms adopted for file sharing in distributed Applications. • Conceptualize the components involved in designing a contemporary OS.
1 MCA 2.2	Data Communication	<ul style="list-style-type: none"> • To learn the basic concepts of data communications. • To learn the layered architecture of communication protocols. • To learn digital signal transmission and encoding techniques. • To learn multiplexing techniques. • To learn the concepts and techniques in error detection and correction.

1 MCA 2.3	Computer Oriented Numerical Methods	<ul style="list-style-type: none"> • Demonstrate understanding and ability to use Least squares and Lagrangian polynomials. • Demonstrate understanding and ability to write code for Gauss method, Ill-conditioned matrix, LU decomposition. • Demonstrate understanding and ability to write code for Jacobi and Gauss-Seidel iteration method • Demonstrate understanding and ability to write code for Trapezoid rule, Simpson's rule, and Newton-Cotes
1 MCA 2.4	Data Structures With C	<ul style="list-style-type: none"> • Understand the concept of Dynamic memory management, data types, algorithms, Big O notation. • Understand basic data structures such as arrays, linked lists, stacks and queues. • Describe the hash function and concepts of collision and its resolution methods. • Solve problem involving graphs, trees and heaps
1 MCA 2.5	Object Oriented Programming with C++	<ul style="list-style-type: none"> • Identify importance of object-oriented programming and difference between structured oriented and object-oriented programming features. • Able to make use of objects and classes for developing programs. • Able to use various object-oriented concepts to solve different problems.
1 MCA 2.6	Data Structure with C Lab	<ul style="list-style-type: none"> • The course is designed to develop skills to design and analyze simple linear and nonlinear data structures. • It strengthens the ability to the students to identify and apply the suitable data structure for the given real world problem. • It enables them to gain knowledge in practical applications of data structures.
1 MCA 2.7	Object Oriented Programming with C++ Lab	<ul style="list-style-type: none"> • Include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features.
MCA III Semester:		

2 MCA 3.1	Analysis And Design of Algorithms	<ul style="list-style-type: none"> • The outcome of this course will help the students to analyze the performance of recursive and iterative algorithms. • Understanding and performing simple proofs of algorithmic complexity and correctness. • An understanding of a variety of well-known algorithms on some of the data structures including the grasping approach, divide and conquer, dynamic programming, backtracking. • To understand P and NP classes. • Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs.
2 MCA 3.2	System Programming	<ul style="list-style-type: none"> • To understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger. • Describe the various concepts of assemblers and microprocessors. • To understand the various phases of compiler and compare its working with assembler. • To understand how linker and loader create an executable program from an object module created by assembler and compiler. • To know various editors and debugging techniques.
2 MCA 3.3	Finite Automata Formal Languages	<ul style="list-style-type: none"> • Demonstrate the relation between regular expressions, automata, languages and grammar with formal mathematical methods. • Design push down automata, cellular automata and turing machines performing tasks of moderate complexity. • Analyze the syntax and formal properties, parsing of various grammars such as LL(k) and LR(k) e) Describe the rewriting systems and derivation languages
2 MCA 3.4	Advance Computer Networking	<ul style="list-style-type: none"> • State the fundamentals related to network security and basics of IPv6 and IPsec. • State the fundamentals related to network security and basics of IPv6 and IPsec. • Explain various protocols related to internet key exchange. • Study Adhoc network and its protocols. e) Define various examples of wireless communication system, standards related to 2G and 3G wireless networks.

2 MCA 3.5	Microprocessors And Interfacing	<ul style="list-style-type: none"> • Distinguish and analyze the properties of Microprocessors & Microcontrollers. • Analyze the data transfer information through serial & parallel ports. • Train their practical knowledge through laboratory experiments
2 MCA 3.6	Analysis Design of Algorithm Lab	<ul style="list-style-type: none"> • Students will be able to designing algorithms using the concepts of dynamic programming, greedy method, Backtracking, Branch and Bound strategy. • Able to compare, contrast, and choose appropriate algorithmic design techniques to present an algorithm that solves a given problem. • Able to develop the efficient algorithms for the problems with suitable designing techniques.
2MCA 3.7	Microprocessor Lab	<ul style="list-style-type: none"> • Demonstrate ability to handle arithmetic operations using assembly language. ... • Assembly Language Program – 8086 using TASM. • Demonstration Programs for 8086 Trainer Kit.

MCA IV Semester:

2 MCA 4.1	Software Engineering	<ul style="list-style-type: none"> • The students will be able to demonstrate the minimum requirement for the development of application. • Ability to develop, maintain, efficient, reliable and cost effective software solutions. • Able to demonstrate and understand how to apply current theories, models, and techniques that provide a basis for the software lifecycle. • Ability to critically thinking and evaluate assumptions for the techniques and tools necessary for engineering practice.
2 MCA 4.2	Computer Graphics And Visualization	<ul style="list-style-type: none"> • Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis. • Use of geometric transformations on graphics objects and their application in composite form. • Extract scene with different clipping methods and its transformation to graphics display device. • Explore projections and visible surface detection techniques for display of 3D scene on 2D screen. • Render projected objects to naturalize.

2 MCA 4.3	Java And J2EE	<ul style="list-style-type: none"> • The objective of this course is to provide the necessary knowledge to design and develop. • To connect to anyJDBC-compliant database, and perform hands on practice with a database to createdatabase-driven connectivity.
2 MCA 4.4	Relational Database Management Systems	<ul style="list-style-type: none"> • Identify basic database storage structures and access techniques such as file organizations, indexing methods including B- tree, and hashing. • Learn and apply Structured query language (SQL) for database definition and database manipulation. • Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database. • Understand various transaction processing, concurrency control mechanisms and database protection mechanisms.
2 MCA 4.5	<u>Elective-I</u> 4.5.1. Optical Networks	<ul style="list-style-type: none"> • Recognize and classify the structures of Optical fiber and types. • Discuss the channel impairments like losses and dispersion. • Analyze various coupling losses. • Classify the Optical sources and detectors and to discuss their principle.
	4.5.2. Artificial Intelligence	<ul style="list-style-type: none"> • Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations. • Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
	4.5.3. Digital Image Processing	<ul style="list-style-type: none"> • Review the fundamental concepts of a digital image processing system. • Analyze images in the frequency domain using various transforms. • Evaluate the techniques for image enhancement and image restoration. • Categorize various compression techniques.
	4.5.4. Microcontrollers	<ul style="list-style-type: none"> • Recall and apply a basic concept of digital fundamentals to Microprocessor based personal computer system. • Identify a detailed s/w & h/w structure of the Microprocessor. • Illustrate how the different peripherals (8255, 8253 etc.) are interfaced with Microprocessor. • Distinguish and analyze the properties of Microprocessors & Microcontrollers.

2 MCA 4.6	Computer Graphics Lab	<ul style="list-style-type: none"> • Understand the basics of computer graphics, different graphics systems and applications of computer graphics. • Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis. • Use of geometric transformations on graphics objects and their application in composite form
2 MCA 4.7	Relational Data Base Management System Lab	<ul style="list-style-type: none"> • Use of various software to design and build ER Diagrams, UML, Flow chart for related database systems. • Students will be able to design and implement database applications on their ow.
MCA V Semester:		
3 MCA 5.1	Object Oriented Analysis and Design	<ul style="list-style-type: none"> • To understand the Object-based view of Systems • To develop robust object-based models for Systems • To inculcate necessary skills to handle complexity in software design.
3 MCA 5.2	Compiler Design	<ul style="list-style-type: none"> • Specify and analyse the lexical, syntactic and semantic structures of advanced language features. • Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation.
3 MCA 5.3	Mobile Computing	<ul style="list-style-type: none"> • The functionality of Mobile IP and Transport Layer • Classify different types of mobile telecommunication systems • Demonstrate the Adhoc networks concepts and its routing protocols • Make use of mobile operating systems in developing mobile applications

3 MCA 5.4	C# Programming And .Net	<ul style="list-style-type: none"> • Design and Implement Windows Applications using Windows Forms, Control Library, Advanced UI Programming & Data Binding concepts • Design and Implement database connectivity using ADO.NET in window based application. • Identify and resolve problems (debug /trouble shoot) in C#.NET window based application • Identify Industry defined problem and suggesting solution(s) using .NET application.
3 MCA 5.5	3.5.1. Embedded Computing Systems	<ul style="list-style-type: none"> • Understand the concept of embedded system, microcontroller, different components of microcontroller and their interactions. • Get familiarized with programming environment to develop embedded solutions. • Program ARM microcontroller to perform various tasks. • Understand the key concepts of embedded systems such as I/O, timers, interrupts and interaction with peripheral devices.
	3.5.2. Data Warehousing and Data Mining	<ul style="list-style-type: none"> • Knowledge: The candidate will get knowledge of: Data preprocessing and data quality. • Modeling and design of data warehouses. Algorithms for data mining. • Skills: - Be able to design data warehouses. Ability to apply acquired knowledge for understanding data and select suitable methods for data analysis.
3 MCA 5.6	Java And J2EE Programming Lab	<ul style="list-style-type: none"> • Learn the Internet Programming, using Java Applets • Create a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT) & Swings • Apply event handling on AWT and Swing components. • Learn to access database through Java programs, using Java Data Base Connectivity (JDBC). • Create dynamic web pages, using Servlets and JSP. • Make a reusable software component, using Java Bean.

3 MCA 5.7	C# and .Net Lab	<ul style="list-style-type: none"> • Create user interactive web pages using ASP.Net. • Create simple data binding applications using ADO.Net connectivity. • Performing Database operations for Windows Form and web applications.
MCA VI Semester:		
3 MCA 6.1	Project Work	<ul style="list-style-type: none"> • Discover potential research areas in the field of IT. • Conduct a survey of several available literatures in the preferred field of study. • Compare and contrast the several existing solutions for research challenge. • Demonstrate an ability to work in teams and manage the conduct. • Formulate and propose a plan for creating a solution for the research plan identified. • Report and present the findings of the study conducted in the preferred domain.