College Code : 7631

ಎಸ್.ಈ.ವಿ. ವಿಜ್ಞಾನ ವಾಣಿಜ್ಯ ಮತ್ತು ಕಲಾ ಕಾಲೇಜು

(ಬೆಂಗಳೂರು ಉತ್ತರ ವಿಶ್ವವಿದ್ಯಾಲಯದಿಂದ ಸಂಯೋಜನೆಗೊಂಡಿದೆ ಹಾಗೂ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಮಾನ್ಯತೆ ಪಡೆದಿದೆ)

S.E.A COLLEGE OF SCIENCE, COMMERCE & ARTS

(Affiliated to Bengaluru North University, and Recognized by Govt. of Karnataka)

NAAC Accredited with 'B' Grade

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PG Department
MCA PROGRAMME

PO & CO

MCA PROGRAMME(Master of Computer Applications)	
PROGRAMME OUTCOME	**PPO1:Computational Knowledge:** Understand computing and optimization techniquesusing mathematics and computational models for solving real-world practical Problems **PPO2: Design / Development of Solutions:** Design and develop solutions for real-worldproblems by identifying relevant assumptions and formulating arguments, which provides user satisfaction in the multi-disciplinary sector **PPO3: Usage of Modern Tools:** develop or select, and apply relevant algorithms/techniques, and resources, using modern IT tools to solve complexcomputing problems and use appropriate software for analysis of data P**PO4: Innovation and Entrepreneurship:** Identify an opportunity for innovation in day-to-day activities and enable an ecosystem to look for innovation opportunities that will help a large set of people be happy and thus allowing them to focus on improving what they do **PO5: Project Management and Finance:** Demonstrate knowledge and understanding of software engineering and management principles and manage projects efficiently as a leader considering economical parameters.

PROGRAM ME SPECIFIC OUTCOME	**PSO1:** To solidify foundation of mathematics, computer science and problem solving methodology for effective implementation in the area of software development **PSO2:**To prepare the students as successful professionals ready for Industry, Government sectors, Academia, Research, Entrepreneurial Pursuit and Consultancy firms **PSO3:**To prepare the graduates to adapt themselves for life-long learning through professional activities on latest technology and trends needed for a successful career **PSO4:**To inculcate professionalism, ethical attitude, communication skills, team work in their profession and adapt to current trends by engaging in lifelong learning. **PSO5:**To prepare students the ability to gain multidisciplinary knowledge through realtime projects and industry internship training and providing a sustainable competitive edge in R&D and meeting industry needs

SEMESTER I	
The Art of Programming	**CO1:** Understand data, Complexity, and order notation and their operations. **CO2:** Demonstrate the key concepts introduced in C programming by writing and executing the programs. **CO3:** Implement the single/multi-dimensional array for the given problem. **CO4:** Demonstrate the application of searching and sorting in solving some societal/industrial problems.
Discrete Mathematics	**CO1:** To Acquaint with advanced knowledge of formal computation and its relationship to languages. **CO2:** To understand fundamentals of logic (the laws of logic, rules of inferences, quantifiers, proofs of theorems), Fundamental **CO3:**To solve principles of counting (permutations, combinations), set theory, relations and functions, graphs, trees **CO4:** Develop the mathematical concepts and technique which should serve as a preparation for more advanced quantitative courses.
Computer Organizationand Architecture	**CO1:** To Learn the concept of data representation and digital logic circuits used in the computer system. **CO2:** To understand architecture of processing, memory and input output organization in a computer system. **CO3:** To Identify, understand and apply different number systems and codes. **CO4:** Interpret concepts of register transfer logic and arithmetic operations.

Theory of Computation	**CO1:**To acquaint with advanced knowledge of formal computation and its relationship to languages. **CO2:**To understand the theoretical computer science areas of formal languages and automata. **CO3:**Interpret the mathematical foundations of computation including automata theory; the theory of formallanguages and grammars; the notions of algorithm, decidability, complexity, and computability. **CO4:**The students will be able to analyze and express computer science problem as mathematical statements and formulate proofs.
Object Oriented Programming **Object Oriented Programming Lab**	**CO1:**To Understand the basic concepts and techniques which form the object -oriented programming paradigm **CO2:**Fundamental features of an object-oriented language like Java: object classes and interfaces, exceptions and libraries of object collections **CO3:**To model of object-oriented programming: abstract data types, encapsulation, inheritance and polymorphism **CO4:**To take the statement of a business problem and from this determine suitable logic for solving the problem; thenbe able to proceed to code that logic as a program written in Java. **CO1:**To understand object-oriented way of solving problems. **CO2:**To use basic, I/O to communicate with the user to populate variables and control program flow. **CO3:**To apply arithmetic, logical, relational, and string manipulation expressions to process data. **CO4:**Conceptualize, Analyze and write programs to solve more complicated problems using the concepts of Object Oriented and java technology.

Data Structures	**CO1:**Understand data, data structures, Complexity order notation, and various complexity measures. **CO2:**Identify relevant data structures to develop solutions for a problem. **CO3:**Analyzes the performance of Trees, Hashing, and searching techniques. **CO4:**Analyze and evaluate the algorithms based on the data structures used, order of notation, and performancemetrics
Data Structures Lab	**CO1:**The course is designed to develop skills to design and analyze linear and nonlinear data structures. **CO2:**To strengthen the ability to identify and apply the suitable data structure for the given real-world problem. **CO3:**To design and analyze the time and space efficiency of the data structure. **CO4:**To identity the appropriate data structure for given problem.
SEMESTER-II	
Operating Systems	**CO1:**Understand and Demonstrate Operating System concepts in general. **CO2:**To acquire through understanding of process synchronization and Deadlock prevention, avoidance and recovery. **CO3:**Analyze Memory management strategies and implement file/disk management concept. **CO4:**Analyze operating system protection and implement virtual machines.
Computer Networks	**CO1:**Understand the advanced networking concepts **CO2:**Apply various networking classifications in day-to-day computing **CO3:**Analyze the importance of routing and congestion control principles **CO4:**Access the different routing protocol methods in the networking support layers
Software Engineering	**CO1:**To understand principles of Agile software development and evolution. **CO2:**To design, formulate, and solve complex engineering problems by applying principles of SE. **CO3:**To Learn Time measurement,Time management and Quality assurance techniques. **CO4:**To analyse communication and planning in Distributed Agile Projects.

The Design and Analysis of Algorithm	**CO1:**To understand and develop efficient algorithms for simple computational tasks. **CO2:**To apply knowledge of computing and mathematics to algorithm design. **CO3:**To design and implement algorithms for moderately difficult computational problems, using various algorithm design techniques. **CO4:**To analyze range of behaviors of algorithms and the notion of tractable and intractable.
Artificial Intelligence	**CO1:**To understand the main concepts, models, technologies, and services of AI, the reasons for the use of AI, and its advantages and disadvantages. **CO2:**Design user interfaces to improve human–AI interaction and real- time decision-making. **CO3:**Develop systems that process unstructured, uncurated data automatically using artificial intelligence (AI)frameworks and platforms. **CO4:**Evaluate and Analyze datasets with the following unsupervised learning methods:for dimensionality reduction;for grouping, k-means clustering and hierarchical clustering.
Database ManagementSystem Lab	**CO1:**To practice the designing, developing and querying a database. **CO2:**To use MySQL/Oracle database to implement the following Case Studies: 1. Company database 2. Library Database 3. Student Management systems **CO3:**To Analyze the problem carefully and Identify the entities, attributes and primary keys for all the entities. **CO4:**Apply cardinalities for each relationship, DDL and DML commands.
SEMESTER-III	
QUANTITATIVE, TEACHING AND RESEARCH APTITUDE	**CO1:**To Understand the basics of mathematics in quantitative aptitude. **CO2:**Apply the Quantitative aptitude problem-solving skills in solving a real-world problem and enrich their knowledge and develop their logical reasoning thinking ability. **CO3:**To demonstrate teaching and research aptitude skills for their lifelong learning. **CO4:**To Analyze holistically the higher education system and Develop skills to meet the competitive examinations for a better job opportunity

RESEARCH METHODOLOGY	**CO1:**Identify the research area and articulate the research steps in a proper sequence for the given problem. **CO2:**Carry out a literature survey, define the problem statement and suggest a suitable solution for the given problem, and present it in the research paper format (IEEE). **CO3:**Analyze the problem and conduct experimental design with the samplings **CO4:**Perform tabulation and graphical representation of collected data and obtain statistical inference.
Machine Learning (ELECTIVE)	**CO1:**Understand the need for data and pre-processing, machine learning techniques for various applications. **CO2:**Identify and apply the appropriate techniques to process the data and solve the applications using machine learning techniques **CO3:**Implement machine learning techniques for real life problem. **CO4:**Evaluate the different data processing and machine learning techniques for various application
BIG DATA & ANALYTICS (ELECTIVE)	**CO1:**Understand the fundamentals of big data analytics frameworks. **CO2:**Apply big data analytics frameworks and visualization techniques to solve problems. **CO3:**Analyze the use of HDFS ecosystem, HDFS architecture, Yarn, Pig, Hive QL. **CO4:**Asses the solutions of big data analytics ecosystems.
CRYPTOGRAPHY AND NETWORK SECURITY (ELECTIVE)	**CO1:**To understand basics of cryptography and network security by symmetric encryption techniques for given applications **CO2:**To apply block, stream ciphers to secure messages over insecure channels **CO3:**To analyze methods for message authentication and access control **CO4:**To evaluate how to encrypt application layer data to identify users and protect information
CLOUD COMPUTING (ELECTIVE)	**CO1:**This course provides knowledge and skills on recent technologies in cloud computing. **CO2:**It is designed to meet the current business needs in the market. It provides a platform for the students to create innovative and robust applications on cloud platform. **CO3:**It provides in depth knowledge of Cloud domain and cover the topics of cloud infrastructures, virtualization, software defined networks and storage, cloud storage, and

	programming models. **CO4:**It will develop the skills needed to become a practitioner or carry out research projects in cloud domain.
WEB PROGRAMMING (ELECTIVE)	**CO1:**Understand the basic constructs of the web concepts **CO2:**Apply the concepts to design and implement the web solutions for the given solutions. **CO3:**To evaluate server-side web application development framework **CO4:**To illustrate responsive web pages using ajax and rails
MINI PROJECT	**CO1:** Define the problems in various domains that can be solved using computer applications. **CO2:** Develop the ability to identify alternative solutions and plan the project. **CO3:** Analyze and Design the software development process. **CO4:** To develop coding and testing skills for software development
SEMESTER-IV	
MAIN PROJECT	**CO1:** Identify the complex Programming problems for software project **CO2:** Understanding the systematic process & sound technical knowledge about the project. **CO3:** Demonstrate different methodologies for making projects and documentation/report writing. **CO4:** Examine the key stages to finalize the project. **CO5:** Select the suitable method which leads to appropriate results. **CO6:** Design software solutions to various problems used for societal benefits