SESHADRIPURAM FIRST GRADE COLLEGE

Yelahanka New Town, Bengaluru – 560064

Permanently Affiliated to Bengaluru City University, Recognized by Government of Karnataka
& Recognized under Section 2 (f) & 12 (B) of the UGC Act, 1956,
Accredited 'A+' Grade by NAAC and ISO 9001 : 2015 Certified

COURSE OUTCOME

Course Code	Course Name	Course Outcome
		Sem1
MCA10T	Computational Mathematics and Statistics	**CO1:** Understand propositions,logical connectivities,truth tables,logical equivalence for simplifications.Apply concepts of sets and their operations,explore role of functions as mathematical models in computer science **CO2:** Apply basic counting principles to solve problems, use of permutations &combinations, learn binominal theorem convept and properties and apply them to computer science. **CO3:** Apply probability theorems, conditional probability and Bayes "rule and analyze indipendent events. **CO4:** Analyze populations and samples using sampling distributions, frequency tables,and statistical measures such as mean variance, and moments, and apply point/interval estimation, and maximum likelihood methods for statistical inference.
MCA102T	Data Structures using Java	**CO1:** Demonstrate proficiency in Java programming fundamentals, including arrays, strings,control structures, and object-oriented programming constructs to solve computational problems **CO2:** Apply advanced Java features such as inheritance, interfaces, exception handling, file handling, and Java Collections Framework to design modular and reusable programs. **CO3:** Implement and analyze linear data structures such as stacks, queues, and linked lists for solving real - world applications effectively. **CO4:** Apply advanced data structures such as trees graphs, and efficient searching/sorting techniques to develop optimized algorithms for complex problem-solving.
MCA103T	Operating System Concepts and Design	**CO1:** Understand the design principles, structures, and goals of operating systems, and analyze their evolution from traditional to modern OS architectures. **CO2:** Apply process management and CPU scheduling techniques, and evaluate concurrency, synchronization, and deadlock -handling strategies in multiprocessor environments.

		CO3: Design and analyze memory management schemes, including paging, segmentation, virtual memory, and protection mechanism for efficient and secure execution. **CO4:** Evaluate and impliment file system structures, I/O subsystem designs, stotage management techniques, and OS-level security principles through case studies of modern operating system.
MCA104T	Advanced Database Management System	**CO1:** Understand the architecture, data models, relational concepts, and SQL operations of database management systems, and design simple schemas for real-world applications **CO2:** Apply normalization, ER/EER mapping, and concurrency control for consistent and efficient database design. **CO3:** Analyze and optimize query processing strategies, and demonstrate the use of distributed, parallel, and data warehouse systems in handling large-scale data **CO4:** Evaluate advanced and emerging database models, and apply database security and protection mechanisms in modern applications
MCA105T	Software Project Management	**CO1:** Understand the fundamentals of software project management, life cycle models, estimation techniques, and planning approaches **CO2:** Apply scheduling methods, resource allocation strategies, risk management, and quality frameworks in project design. **CO3:** Analyze project monitoring and control techniques, configuration management tools, and contract management practices. **CO4:** Evaluate advanced project management practices including Agile, DevOps, communication, leadership, and project closure strategies.
MCA101E	Mobile Computing	**CO1:** To understand the evolution, principles, and challenges of mobile computing and wireless communication systems. **CO2:** Apply networking and transport layer protocols, wireless LAN standards, and routing mechanisms to support mobility in computing environments. **CO3:** Analyze the design of mobile systems, operating platforms, and application development processes with considerations for usability and resource efficiency. **CO4:** Evaluate emerging trends, security mechanisms, and real-world applications of mobile computing in diverse domains.
MCA102E	Software Testing with Selenium	**CO1:** Understand the principles of software testing, the testing life cycle, and the role of testing across different stages ofsoftware development.

		CO2: Apply test design techniques, test management practices, and automation concepts to improve the effectiveness and efficiency of testing processes. **CO3:** Analyze and implement automated testing frameworks using industry-standard tools, incorporating user interaction handling, reporting, and design patterns. **CO4:** Evaluate advanced automation strategies, integration with continuous delivery pipelines, and emerging trends in test automation for real-world applications.
Sem 2		
MCA201T	Artificial Intelligence	**CO1:** Understand Intelligent agents and their environments, and apply problem-solving techniques to classical AI problems. **CO2:** Apply various search strategies, game-playing techniques, and knowledge representation methods to model and solve AI problems effectively. **CO3:** Apply logical and probabilistic reasoning, advanced knowledge representation, and machine learning techniques to develop intelligent systems. **CO4:** Understand the structure and applications of expert systems, apply engineering and reasoning techniques, and evaluate their integration with machine learning and societal impacts.
MCA202T	Advanced Algorithms	**CO1:** Demonstrate algorithmic foundations, problem-solving strategies, and asymptotic complexity analysis. **CO2:** Apply greedy techniques and graph algorithms to solve optimization and traversal problems effectively. **CO3:** Develop solutions using dynamic programming and backtracking approaches for complex computational problems. **CO4:** Analyze advanced algorithmic strategies such as branch and bound, approximation, randomized methods, and evaluate computational complexity classes.
MCA203T	Python Programming	**CO1:** Understand Python programming fundamentals including syntax, control structures, functions and string manipulations. **CO2:** Apply built-in and advanced data structures, file handling techniques, and exception management to solve computational problems. **CO3:** Develop object-oriented solutions in Python by applying principles of abstraction, encapsulation, inheritance, and polymorphism. **CO4:** Analyze and visualize data, implement system-level programming concepts, and integrate Python with external resources to build real-world applications.
MCA204T	Computer Networks	**CO1:** Understand the fundamental concepts of computer networks, network models, physical layer transmission media, and performance metrics.

		CO2: Apply error detection/correction methods, data link protocols, and medium access control techniques for reliable and efficient data transmission. **CO3:** Analyze network layer functions, addressing schemes, routing algorithms, IPv6 protocols, and emerging networking paradigms such as SDN and NFV. **CO4:** Evaluate transport and application layer protocols, congestion control mechanisms, QoS strategies, and basic network security and cloud networking concepts.
MCA205T	Cryptography and Information Security	**CO1:** Apply fundamental concepts of security and classical cryptography to demonstrate basic encryption and decryption techniques. **CO2:** Apply symmetric and asymmetric cryptographic algorithms, key management, and digital signature techniques for secure communication. **CO3:** Analyze the role of cryptographic hashing, authentication methods, and network security protocols in protecting data and communication. **CO4:** Evaluate system-level threats, secure coding practices, cloud and application security mechanisms, and emerging security trends.
MCA201E (a)	Automata Theory	**CO1:** Apply the principles of formal proof, mathematical induction, and finite automata to represent and simplify regular languages. **CO2:** Analyze and construct regular expressions, grammar and context-free languages using closure properties, pumping lemmas, and normal forms. **CO3:** Design and compare computational models such as PDA, DPDA, and transducers for acceptance of CFLs and evaluate their equivalence with CFGs. **CO4:** Evaluate the power and limitations of Turing machines by solving problems on decidability, undecidability, and reductions.
MCA201E (b)	Digital Image Processing	**CO1:** Understand the fundamentals of image formation, sensing, sampling, quantization, and apply enhancement techniques in both spatial and frequency domains. **CO2:** Demonstrate proficiency in various image transforms and employ filtering techniques for image restoration under different degradation models. **CO3:** Utilize compression methods and perform morphological operations (dilation, erosion, opening, closing) to solve real-world image processing tasks. **CO4:** Evaluate segmentation strategies, extract meaningful features, and perform object recognition/classification for applications in fields like medical imaging, remote sensing, and computer vision.