KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
FE	Programming and Problem Solving	CO110005.1	Inculcate and apply various skills in problem solving.
		CO110003.2	Choose most appropriate programming constructs and features to solve the problems in diversified domains.
		CO110003.3	Exhibit the programming skills for the problems those require the writing of well documented programs including use of the logical constructs of language, Python.
		CO110003.4	Demonstrate significant experience with the Python program development environment
		CO110003.5	Demonstrate features of Object Oriented Programming.
		CO110003.6	Exhibit the programming skills with the use and benefits of files handling
SE	Discrete Mathematics	CO210241.1	Solve real world problems logically using appropriate set, function, and relation models.
		CO210241.2	Analyze and synthesize the real world problems using discrete mathematics.
		CO210241.3	Understand the problems and find out the best outcomes.
		CO210241.4	Solve the real world examples like Shortest Path Problem using graph & Tree data structure.
		CO210241.5	Solve the real world examples logically using Permutation & combination & Probability.
		CO210241.6	Analyze logic and proof techniques to expand mathematical maturity.
SE	Digital Electronics and Logic Design	CO210242.1	Realize the Boolean Algebraic assignments for designing digital circuits using K-Maps.
		CO210242.2	Simplify Boolean Algebraic assignments for designing digital circuits using K-Maps.
		CO210242.3	Design and implement Sequential and Combinational digital circuits as per the specifications.
		CO210242.4	Apply the knowledge to appropriate IC as per the design specifications
		CO210242.5	Design simple digital systems using VHDL
		CO210242.6	Develop simple embedded system for simple real world application
SE	Data structure and algorithms	CO210243.1	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
		CO210243.2	Analyze the principles of computer architecture using examples drawn from commercially available computers.
		CO210243.3	Evaluate various design alternatives in processor organization.
		CO210243.4	Understand basic microprocessor programming requirements.
		CO210243.5	To use appropriate algorithmic strategy for better efficiency
		CO210243.6	To analyze Algorithmic strategy.

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
SE	Computer organization and Architecture	CO210244.1	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
		CO210244.2	Analyze the principles of computer architecture using examples drawn from commercially available computers.
		CO210244.3	Evaluate various design alternatives in processor organization.
		CO210244.4	Understand basic microprocessor programming requirements.
		CO210244.5	Know the interconnection of different peripherals with processor.
		CO210244.6	Write simple micro-operations involved in various cycles
SE	Object Oriented Programming	CO210245.1	Analyze the strengths of object oriented programming.
		CO210245.2	Design and Apply OOP principles for effective programming.
		CO210245.3	Analyze OOP Features using programming Language C++.
		CO210245.4	Develop Programming application using Object Oriented Programming Language C++.
		CO210245.5	Understanding the concept of pointers in C++.
		CO210245.6	Percept the utility and applicability of OOP.
SE (Sem-II)	Engineering Mathematics-III	CO207003.1	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.
		CO207003.2	Solve problems related to Fourier transform, Z-Transform and applications to Signal and Image processing.
		CO207003.3	Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence.
		CO207003.4	Perform vector differentiation and integration to analyse the vector fields and apply to compute line, surface and volume integrals.
		CO207003.5	Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing.
		CO207003.6	Analyze conformal mappings, transformations and perform contour integration of complex functions required in Digital filters and Computer graphics.

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
SE	Computer Graphics	CO210251.1	Apply mathematics and logic to develop Computer programs for Elementary graphic operations.
		CO210251.2	Develop scientific and strategic approach to solve complex problems in the domain of Computer Graphics.
		CO210251.3	Understand the problems and find out the best outcomes.
		CO210251.4	Develop the competency to understand the concepts related to Computer Vision and Virtual reality.
		CO210251.5	Apply the logic to develop animation and gaming programs.
		CO210251.6	Analyze logic and techniques to expand Graphical transformation Methods.
SE	Advance Data Structures	CO210252.1	To apply appropriate advanced data structure and efficient algorithms to approach the Problems of various domain.
		CO210252.2	To design the algorithms to solve the programming problems.
		CO210252.3	To use effective and efficient data structures in solving various Computer Engineering domain problems.
		CO210252.4	To analyze the algorithmic solutions for resource requirements and optimization
		CO210252.5	To use appropriate modern tools to understand and analyze the functionalities confined to the data structure usage.
		CO210252.6	To use appropriate modern tools to understand and analyze the functionalities confined to the data structure usage.
SE	Microprocessor	CO210253.1	To apply the assembly language programming to develop system level microprocessor base programming.
		CO210253.2	To apply the assembly language programming to develop small real life embedded application
		CO210253.3	To understand the architecture of the advanced processor thoroughly to use the resources for programming
		CO210253.4	To understand the programming model of the advanced processor thoroughly to use the resources for programming
		CO210253.5	To understand the higher processor architectures descended from 80386 architecture
		CO210253.6	To understand the peripheral interfacing or co-processor with microprocessor

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
SE	Principles of Programming Languages	CO210254.1	To analyze the strengths and weaknesses of programming languages for effective and efficient program development.
		CO210254.2	To inculcate the principles underlying the programming languages enabling to learn new programming languages.
		CO210254.3	Illustrate different programming paradigms with examples
		CO210254.4	To use the programming paradigms effectively in application development
		CO210254.5	Initiate their study towards advanced programming concepts.
		CO210254.6	Acquired expertise in structuring the programs according to paradigms.
TE	Theory of Computation	CO310241.1	Design Finite Automata for computational problems
		CO310241.2	Transform a language into regular expression or finite automaton or transition graph
		CO310241.3	Subdivide problem space based on input subdivision using constraints, Grammar
		CO310241.4	Design Deterministic Turing machine for all inputs and all output
		CO310241.5	Building a context-free grammar for pushdown automata
		CO310241.6	Apply linguistic theory
TE	Database Management System	CO310242.1	Design E-R Model for given requirements and convert the same into database tables.
		CO310242.2	Use database techniques such as SQL & PL/SQL.
		CO310242.3	Use modern database techniques such as NOSQL.
		CO310242.4	Explain transaction Management in relational database System.
		CO310242.5	Describe different database architecture and analyses the use of appropriate architecture in real time environment.
		CO310242.6	Use advanced database Programming concepts
TE	Software Engineering and Project Management	CO310243.1	Decide on a process model for a developing a software project
		CO310243.2	Classify software applications and Identify unique features of various domains.
		CO310243.3	Design test cases of a software system.
		CO310243.4	Understand basics of IT Project management.
		CO310243.5	Plan, schedule and execute a project considering the risk management.
		CO310243.6	Apply quality attributes in software development life cycle.

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
TE	Information Systems & Engineering Economics	CO310244.1	Understand the need, usage and importance of an Information System to an organization.
		CO310244.2	Understand the activities that are undertaken while managing, designing, planning, implementation, and deployment of computerized information system in an organization.
		CO310244.3	Understand various Information System solutions like ERP, CRM, Data warehouses and the issues in successful implementation of these technology solutions in any organizations
		CO310244.4	Outline and use the past history, present position and expected performance of a company engaged in engineering practice or in the computer industry
		CO310244.5	Perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.
		CO310244.6	Organize and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives
		CO310244.7	Demonstrate on various types of taxes and its uses
TE	Computer Networks	CO310245.1	Analyze the requirements for a given organizational structure to select the most appropriate networking architecture, topologies, transmission mediums, and technologies
		CO310245.2	Demonstrate design issues, flow control and error control
		CO310245.3	Analyze data flow between TCP/IP model using Application, Transport and Network Layer Protocols.
		CO310245.4	Illustrate applications of Computer Network capabilities, selection and usage for various sectors of user community.
		CO310245.5	Illustrate Client-Server architectures and prototypes by the means of correct standards and technology.
		CO310245.6	Demonstrate different routing and switching algorithms
TE	Design and Analysis of Algorithms	CO310250.1	To formulate the problem in the projects.
		CO310250.2	To analyze the asymptotic performance of algorithms.
		CO310250.3	Decide and apply algorithmic strategies to solve given problems.
		CO310250.4	Find optimal solution by applying various methods.
		CO310250.5	Compare between different data structures. Pick an appropriate data structure for a design situation.
		CO310250.6	Explain what an approximation algorithm is, and the benefit of using approximation algorithms.

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
TE	System Programming and Operating System	CO310251.1	Analyze and synthesize system software
		CO310251.2	Understand basics of compilers and tools like LEX and YACC
		CO310251.3	Implement and traces operating system functions
		CO310251.4	Demonstrate on process management
		CO310251.5	Demonstrate on memory management in multi-cores OS
		CO310251.6	Demonstrate on I/O management in multi-cores OS
TE	Embedded Systems & Internet of Things	CO310252.1	To assess the vision and introduction of IoT.
		CO310252.2	To Understand IoT Market perspective.
		CO310252.3	To Implement Data and Knowledge Management and use of Devices in IoT Technology
		CO310252.4	To Understand State of the Art-IoT Architecture.
		CO310252.5	To classify Real World IoT Design Constraints, Industrial Automation in IoT.
		CO310252.6	Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
TE	Software Modeling and Design	CO310253.1	Analyze the problem statement (SRS) and choose proper design technique for designing web-based/ desktop application
		CO310253.2	Design and analyze an application using UML modeling as fundamental tool
		CO310253.3	Apply design patterns to understand reusability in OO design
		CO310253.4	Decide and apply appropriate modern tool for designing and modeling
		CO310253.5	Decide and apply appropriate modern testing tool for testing web-based/desktop application
		CO310253.6	Decide and design appropriate test cases and apply different testing methods accordingly.
TE	Web Technology	CO310254.1	analyze given assignment to select sustainable web development design methodology
		CO310254.2	Write a well formed / valid XML document.
		CO310254.3	Build dynamic web pages using JavaScript (Client side programming).
		CO310254.4	Students will be able to Build interactive web applications using AJAX.
		CO310254.5	develop web based application using suitable client side and server side web technologies
		CO310254.6	develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
BE	Design and Analysis of Algorithm	CO410441.1	To formulate the problem in the projects.
		CO410441.2	To develop SRS in the projects
		CO410441.3	To solve problems for multi-core or distributed or concurrent /Parallel /Embedded environments.
		CO410441.4	Explain what competitive analysis is and to which situations it applies. Perform competitive analysis.
		CO410441.5	Compare between different data structures. Pick an appropriate data structure for a design situation.
		CO410441.6	Explain what an approximation algorithm is, and the benefit of using approximation algorithms.
BE	Principles of Modern complier design	CO410442.1	Solve problem of parsing and compiling
		CO410442.2	Design and write simple compiler for concise programming language
		CO410442.3	Determine the outputs of each phase
		CO410442.4	Use compiler tools in basic, concurrent, distributed and embedded environments
		CO410442.5	Demonstrate the working of phases of compiler
		CO410442.6	Develop awareness of modern compiler design for functional and logic programming languages
BE	Smart System Design and Applications	CO410443.1	To write and survey solution for multidisciplinary case-study using mathematical modelling gives presentations using soft skills methodologies.
		CO410443.2	Implement problem solving, optimization, search algorithm and game.
		CO410443.3	To solve problems for multi-core or distributed, concurrent and embedded environments.
		CO410443.4	Handle uncertainty and apply knowledge of reasoning in decision theory.
		CO410443.5	To write and survey embedded systems applications using machine learning.
		CO410443.6	Understand and implement applications of natural language processing, image processing etc.
BE	Data Mining Techniques & Application	CO410444D.1	To present survey on different learning methods.
		CO410444D.2	To present survey on different classification methods.
		CO410444D.3	To present survey on different data mining foundations.
		CO410444D.4	To write programs and methods for data Mining applications.
		CO410444D.5	To solve problems for multi-core or distributed environments
		CO410444D.6	To solve problems for multi-core or parallel environments

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
BE	Pervasive Computing	CO410445B.1	Students will be able to design UbiCom system for given problem.
		CO410445B.2	Students will be able to enlist requirements of device, environment and interaction for UbiCom system.
		CO410445B.3	Students will be able to identify services for mobile computing applications based on middleware
		CO410445B.4	Students will be able to identify security issues in Pervasive Networks and suggest solutions.
		CO410445B.5	Student will able to identify Challenges and outlooks of ubicom system
		CO410445B.6	Students will be able to identify Smart device interaction in pervasive environments.
BE	Software Design Methodologies and Testing	CO410449.1	To choose and apply design techniques for software system
		CO410449.2	To design Object Oriented model and implement it using UML tool
		CO410449.3	To design and model using UML for a given software system
		CO410449.4	To design test cases and implement automated testing for client server, Distributed, mobile applications
		CO410449.5	To understand the importance of software quality/software testing and apply software testing techniques for information systems development
		CO410449.6	To understand test cases from software requirements using various test processes for continuous quality improvement
BE	High Performance Computing	CO410450.1	To transform algorithms in the computational area to efficient programming code for modern computer architectures.
		CO410450.2	To write, organize and handle programs for scientific computations
		CO410450.3	To create presentation of using tools for performance optimization and debugging
		CO410450.4	To present analysis of code with respect to performance and suggest and implement performance improvements
		CO410450.5	To present test cases to solve problems for multi-core or distributed, concurrent/Parallel environments
		CO410450.6	Effective selection and use of data structures while problem solving and programming

KCT`s
Sapkal Knowledge Hub
Late G. N. Sapkal College of Engineering Nashik
Department of Computer Engineering
Course Outcomes

Year	Course Name	Course Outcome No.	Course Outcome
BE	Mobile Computing	CO3410451A.1	Students will be able to explain major concepts and techniques in the field of mobile computing.
		CO3410451A.2	Students will be able to explain 2G and 3G communication systems.
		CO3410451A.3	Students will be able to explain mobile IP, and mobile TCP.
		CO3410451A.4	Students will be able to explain the role of databases in mobile systems and methods of data caching, dissemination and synchronization.
		CO3410451A.5	Students will be able to explain Bluetooth, IrDA and ZigBee protocols.
		CO3410451A.6	Students will be able to explain mobile device data security, mobile ad hoc and wireless sensor networks.
BE	Mobile Applications	CO410452C.1	To write a survey on tools and architectures for Mobile Applications.
		CO410452C.2	Describe those aspects of mobile programming that make it unique from programming for other platforms.
		CO410452C.3	To write using mathematical models the problem solutions using Mobile Applications.
		CO410452C.4	To write develop mobile applications using open source tools.
		CO410452C.5	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces.
		CO410452C.6	Deploy applications to the marketplace for distribution