



Department of Computer Engineering  
K. K. Wagh Institute of Engineering Education and Research  
Hirabai Haridas Vidyanagari, Amrut Dham, Panchavati, Nashik-422003

## **Course Outcomes**

### **SY BTech Computer Engineering**

### **Sem I (2022 Pattern)**

#### **COM222001: Fundamentals of Data Structures**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Describe the fundamental concepts and terminology of data structures and algorithms, including arrays, linked lists, stacks, queues and searching and sorting algorithms
- CO2 Demonstrate the ability to choose and implement appropriate data structures such as Array, linked list, stack and queue to solve a given problem
- CO3 Implement algorithms for array and linked list processing such as insertion, and deletion using C++
- CO4 Use stack and / or queue to solve the given problem
- CO5 Compare different searching and sorting algorithms based on their performance, strengths, and limitations.

#### **COM222002: Computer Graphics**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Explain basic concepts of computer graphics to generate line, circle & polygon
- CO2 Make use of algorithms for polygon filling and polygon clipping
- CO3 Apply geometric transformations on 2D and 3D objects
- CO4 Make use of color models and hidden surface removal algorithms for rendering geometrical objects
- CO5 Develop graphical applications using Curves and Fractals

#### **COM222003: Discrete Mathematics**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Solve problems using propositional logic and number theory
- CO2 Use relations or functions to solve problems
- CO3 Apply graph theory to represent data and solve associated problems
- CO4 Apply the concepts of trees to generate minimum spanning tree and prefix code
- CO5 Use algebraic structures to solve problems

#### **COM222004: Digital Electronics and Logic Design**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Solve the problem of minimization using K Map and Quine Mc-Clusky method of Boolean expression
- CO2 2. Build combinational circuits using AND-OR logic
- CO3 Build combinational circuits using SSI and MSI logic
- CO4 Explain applications of Flip Flops, registers and shift registers
- CO5 Develop sequential logic circuits using Flip Flops and MSI logic



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### **COM222005: Programming Paradigms and Java Programming**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Remember and describe various programming paradigms
- CO2 Make use of appropriate data types and control structures in Java to solve a given problem
- CO3 Apply object oriented constructs in Java
- CO4 Make use of exception handling and multithreading in Java
- CO5 Compare and contrast Functional and Logic programming

### **COM222006: Design Thinking**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Explain stages and process of design thinking
- CO2 Identify the methods to empathize and define the problem
- CO3 Apply the ideation techniques for problem solving
- CO4 Construct the prototype to evaluate a design
- CO5 Apply testing techniques to improve the performance

### **COM222007: Data Structures Lab**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Describe the fundamental concepts and terminology of data structures and algorithms, including arrays, linked lists, stacks, queues and searching and sorting algorithms
- CO2 Demonstrate the ability to choose and implement appropriate data structures such as Array, linked list, stack and queue to solve a given problem
- CO3 Implement algorithms for array and linked list processing such as insertion, and deletion using C++
- CO4 Use stack and / or queue to solve the given problem
- CO5 Compare different searching and sorting algorithms based on their performance, strengths, and limitations.

### **COM222008: Digital Electronics Lab**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Solve the problem of minimization using K Map and Quine Mc-Clusky method of Boolean expression
- CO2 2. Build combinational circuits using AND-OR logic
- CO3 Build combinational circuits using SSI and MSI logic
- CO4 Explain applications of Flip Flops, registers and shift registers
- CO5 Develop sequential logic circuits using Flip Flops and MSI logic



### **COM222009: Programming Paradigms and Computer Graphics Lab**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Demonstrate Object Oriented Programming features like inheritance, data abstraction, encapsulation, and polymorphism to solve various computing problems
- CO2 Illustrate the use of exception handling and multithreading in Java
- CO3 Compare and contrast Functional and Logic programming
- CO4 Apply basic concepts of computer graphics to generate line, circle and polygon
- CO5 Make use of algorithms for polygon filling and clipping
- CO6 Apply geometric transformations on 2D objects
- CO7 Develop graphical applications using Curves and Fractals

### **COM222010: Python Programming Lab**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Use the core concepts to write a python program
- CO2 Apply control structure and loops to build a solution for a given problem
- CO3 Develop python program for string manipulation
- CO4 Build a solution for a given problem using lists, sets, tuples, dictionaries
- CO5 Develop programs using functions

### **SMH222111: Applied Mathematics – III**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Understand basic concept of Statistic
- CO2 Understand basic concept of probability distribution
- CO3 Apply the basic concepts of statistics to real life problems
- CO4 Apply the basic concepts of probability distribution theory to real life problems
- CO5 Analyze real life problems by using theory of statistics and Probability distribution

### **COM222012: Advanced Data Structures**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Make use of non-linear data structures such as graph and trees to solve a given problem
- CO2 Use different representations of symbol table
- CO3 Apply the hash table and its collision resolution methods and different file handling techniques
- CO4 Use efficient indexing techniques and multiway search trees to store and maintain data
- CO5 Analyze an algorithm used for solving a given problem



### **COM222013: Operating systems**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Explain operating system services, types of operating systems and basic shell commands
- CO2 Illustrate the concept of process scheduling algorithms to solve scheduling problems
- CO3 Compare algorithms for deadlock detection, prevention and avoidance
- CO4 Use algorithms for page replacement and I/O management
- CO5 Describe Linux commands and utilities such as grep, tr, sed, awk

### **COM222014: Computer Architecture**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Explain data representation, register transfer and Micro operations
- CO2 List the steps for design of accumulator logic
- CO3 Compare hardwired and micro programmed control
- CO4 Explain pipeline and vector processing and algorithms for arithmetic operations
- CO5 Explain I/O and memory organization

### **COM22015: Software Engineering and Project Management**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Identify appropriate process model for software development.
- CO2 Model software requirements for software development.
- CO3 Make use of emerging trends for software project management.
- CO4 Utilize project metrics for software project estimation and process improvement
- CO5 Analyze software risks involved in project development.

### **COM222016: MOOC – Client Side Technology**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Build web pages using HTML
- CO2 Apply CSS for styling web pages
- CO3 Use of Java Script for web development
- CO4 Use Angular for web development
- CO5 Use front-end frameworks for web development



### **COM222017: Advanced Data Structures Lab**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Make use of non-linear data structures such as graph and trees to solve a given problem
- CO2 Use different representations of symbol table
- CO3 Apply the hash table and its collision resolution methods and different file handling techniques
- CO4 Use efficient indexing techniques and multiway search trees to store and maintain data
- CO5 Analyze an algorithm used for solving a given problem

### **COM222018: Operating Systems Laboratory**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Explain operating system services, types of operating systems and basic shell commands
- CO2 Illustrate the concept of process scheduling algorithms to solve scheduling problems
- CO3 Compare algorithms for deadlock detection, prevention and avoidance
- CO4 Use algorithms for page replacement and I/O management
- CO5 Describe Linux commands and utilities such as grep, tr, sed, awk

### **COM222019: Microprocessor Lab**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Develop assembly language programs for Pentium microprocessor family
- CO2 Make use of “syscall” to perform Input/output operations
- CO3 Compare Near and Far procedures
- CO4 Make use of instruction set, data types, assembler directives, flags to write assembly language programs
- CO5 Illustrate looping and control structures using assembly language programs
- CO6 Develop assembly language programs for strings

### **COM222020: Project Based Learning –Client Side Technology**

**Course Outcomes: On completion of the course, students will be able to–**

- CO1 Identify the real life and societal problem
- CO2 Build web pages using client side technologies
- CO3 Make use of Angular for web development
- CO4 Make use of front-end frameworks for web development