

B.Sc. Forensic Science: Semester-V

FST506: Computer Science - V

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week	Class Test - 12 Marks
Tutorials: 1 hr/Week	Teachers Assessment - 6 Marks
Credits: 4	Attendance - 12 Marks
	End Semester Exam - 75 Marks

Course outcomes:

- Understand that various problem solving categories exist such as; iterative technique, divide and conquer, dynamic programming, greedy algorithms, and understand various searching and sorting algorithms.
- Employ a deep knowledge of various data structures when constructing a program.
- Design and construct simple object-oriented software with an appreciation for data abstraction and information hiding.
- Effectively use software development tools including libraries, compilers, editors, linkers and debuggers to write and troubleshoot programs.

Unit I – Analysis of Algorithm and Data Structures

- Introduction: Basic Design and Analysis techniques of Algorithms, time and space complexity, Correctness of Algorithm, Algorithm Design Techniques: Iterative techniques, Divide and Conquer, Dynamic Programming, Greedy Algorithms.
- Sorting Techniques: Elementary sorting techniques-Bubble Sort, Insertion Sort, Merge Sort, Advanced Sorting techniques-Heap Sort, Quick Sort, Sorting in Linear Time- Bucket Sort, Radix Sort and Count Sort

Unit II – Searching Techniques and Complexity Analysis

- Linear and Binary search, Medians & Order Statistics.
- Arrays: Single and Multi-dimensional Arrays, Sparse Matrices;

Unit III – Stacks and Queues

- Implementing stack using array and linked list, Prefix, Infix and Postfix expressions, Utility and conversion of these expressions from one to another; Array and Linked representation of Queue, De-queue, Priority Queues

Unit IV – Linked Lists

- Singly, Doubly and Circular Lists, representation of Stack and Queue as Linked Lists.
- Recursion: Developing Recursive Definition of Simple Problems and their implementation; Advantages and Limitations of Recursion;

Unit V – Trees

- Introduction to Tree as a data structure; Binary Trees, Binary Search Tree, (Creation, and Traversals of Binary Search Trees)

Head

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