Semester		
Course	**Minor – ARTIFICIAL INTELLIGENCE**	
Paper Code		
Paper Title	**Data Structures**	
No. of Credits	**4**	
Theory/ Practical / Composite	**Composite**	
Minimum no. of preparatory hours per week a student have to devote	**5**	
Number of Modules	**One**	
Syllabus	1. Algorithm fundamentals, Introduction to time and space complexity 2. Abstract Data Type (ADT) 3. Searching and Sorting Algorithms: Linear search; Binary search; Bubble sort; Selection sort; Insertion sort; Quick sort; Merge sort 4. Linear Data Structures: Stack; Queue; Introduction to linked lists 5. Non-linear Data Structures: Binary Tree; Binary Search Tree (BST) 6. Practical – Using Python	
Learning Outcomes	After completing this course, students will be able to: 1. Evaluate the efficiency of algorithms in terms of time and space complexity. 2. Understand the role of Abstract Data Types in algorithm design and problem-solving. 3. Apply linear and binary search techniques to locate elements in datasets. 4. Implement and analyze various sorting algorithms (Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort) in terms of the best, worst and average-case complexities. 5. Gain a basic understanding of linked lists and their advantages over arrays. 6. Understand and implement non-linear data structures.	
Reading / Reference List	1. Data Structures – Seymour Lipschutz, McGraw-Hill Education 2. Data Structures and Algorithms in Python, by Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser, WILEY 3. Fundamentals of Data Structures, Ellis Horowitz	
Evaluation	Theory CIA: 12 Attendance: 3 Semester Exam: 45	Practical CA: 38 Attendance: 2
Paper Structure for Theory Semester Exam	Answer 3 out of 5 of 15 marks each	