Course name	**ECE 35900 Data Structures**
Credit and contact hours	(3 cr.) Class 3
Course coordinator's name	Stanley Chien
Textbook	Thomas A. Standish, *Data Structures, Algorithms, & Software Principles in C*, 2nd Ed., Pearson, 2005, ISBN 9780534390808.
Course information	**ECE 35900 Data Structures (3 cr.)** P: ECE 26300. Class 3. An introductory course in computer engineering, with emphasis on data structure and program design using the C language. The classical concepts of structured programming such as stack, queue, linked list, tree, recursion, sorting, and searching. Applications of structured programming in engineering. **Prerequisites/ Co-Requisite** ECE 26400 or equivalent **Required, Elective, or Selected Elective:** EE Elective, CE Elective
Goals for the course	Upon successful completion of the course, students should be able to 1. Design and analyze data structures (arrays, stacks, queues, lists, trees, graphs) for a given application. [6, 2] 2. Select appropriate data structures for a given application. [1,1,2,6] 3. Design and analyze algorithms (sorting, searching, and hashing.) for a given application. [6, 2] 4. Select appropriate algorithms for a given application. [1, 1,2,6]
List of topics to be covered	1. Introduction 2. Complexity and Asymptotic Notation 3. Stacks, Queues, Dequeues; Abstract Data types; Implementation; Arrays, Pointers, Linked Lists; Applications 4. Stack and Recursion 5. Sorting; Exchange, Selection, Tree, Insertion, Merge 6. Searching; Sequential, Binary, Tree, and Hashing; Balanced Trees, B-Trees, Tries 7. Graphs; Graph Traversal, PERT Diagrams, Spanning Trees, Shortest Paths 8. Advanced Topics: Greedy Algorithms (e.g., Huffman Coding) and Dynamic Programming (e.g., Optimal Search Tree, 0-1 Knapsack Problem)
Syllabi approved by	Stanley Chien
Date of approval	12/04/2021