

ECE 368: COURSE OUTLINE

Required Text:

Algorithms in C (Parts 1-4 and Part 5), by R. Sedgewick, Addison Wesley (2002)

<u>Topic</u>	<u>Lecture</u>	<u>Reading</u>
General Course Introduction	Week 1	Chapter 1, 3
Abstract Data Types	Week 1	Chapter 4
Arrays and Stacks Implementation and Examples	Weeks 1,2	Chap 4
Queues and Lists Implementation and applications Simulation Examples Little's Law and M/M/1 Systems	Weeks 3,4	Chap 4, handouts
Recursion	Week 4	Chapter 5
Trees Binary trees, Huffman coding and Applications	Week 5	Chapter 5, Chapter 18
Complexity and Big O Notation	Week 6	Chapter 2
Sorting Exchange, Selection, Tree, Insertion, Merge and Radix	Weeks 7-9	Chapter 6-10
Searching Sequential, Binary, Tree and Hashing	Weeks 9-11	Chapter 12,14,15
Graphs Transitive Closure, Network Flow, Minimum Distance Graph Traversal, PERT Diagrams and Spanning Trees	Weeks 12-14	Chapter 17-22
Testing and review	One Week	

Course Outcomes

A student who successfully fulfills the course requirements will have demonstrated:

- i. an ability to analyze basic algorithms for worst-case time complexity. [1,2,4;a,b]
- ii. an ability to apply recursive backtracking for problem solving. [1,4;c,e,k]
- iii. an ability to apply graph theory techniques, data structures and algorithms to engineering applications. [1,2,4;a,b,c,e,k]
- iv. an ability to select the appropriate searching algorithms for a given application. [1,2,4;a,b,c,e,k]
- v. an ability to select the appropriate sorting algorithms for a given application. [1,2,4;a,b,c,e,k]

You will be tested for these outcomes. Rules for passing these outcomes will be described later on.