### ECE 3020 - Exam 2 Material

#### I. Probability (Web)
- Prob. basics: sample space, prob. axioms/lemmas
- Experiments w/ equally likely outcomes
- Experiments w/ not equally likely outcomes
- Conditional prob.; independence
- Bayes formula; law of total prob.
- Expectation, variance
- Huffman codes (only on Web)
- Randomized alg's (Sec. 4.13)

#### II. Trees
- Definitions, structural and recursive (Sec. 5.2)
- Tree terminology (Sec. 5.2)
- Structural induction (Sec. 5.5)
- Data structures for trees (Sec. 5.3)
- Depth-first search (Sec. 5.4) 5.6
- Binary search trees (Sec. 5.7)
- AVL trees (Web)
- Heaps, heapsort (Sec. 5.8, 5.10)

#### III. Graphs
- Graph basics (Sec. 9.2)
- Connected components, depth-first search (Sec. 9.6, 9.7)
- Data structures for graphs (Sec. 9.3)
- Minimum-weight spanning trees, Prim's alg. (Sec. 9.5, Web)
- Dijkstra's shortest path alg. (Sec. 9.8)
- A* alg. (Web)
- Floyd's alg. (Sec. 9.9)
- Network flow, Ford-Fulkerson alg. (Web)
- Planarity, graph coloring (Sec. 9.10)