CSC 281 – Automata and Algorithms
Final Exam Study Guidelines

There will be six parts to the final exam. The following are a list of skills that you should have to do well on the final exam. You should be aware that even though this final will be open book, you will not find the answers to these questions there. Your book and notes will, however, serve as a resource for details on the problems.

In preparation for the final exam, you should look at homework and exam questions on these topics. A few sample questions to look at are given below. For part 6 there is no equivalent problem, because these address a general understanding of the material from the second part of the semester.

Part I – Finite Automata
You should be able to give the complete set of transitions for a finite automaton to accept a given language. You can also draw the finite automata, however, you will still be required to give a text description of what the automata is doing.

Examples: page 174 #1a-c.

Part II – Pushdown Automata
You should be able to give the complete set of transitions for a pushdown automaton to accept a given language. You will be required to give a text description of what the states of the automata are doing.

Examples: page 187 #1a-c.

Part III – Turing Machines
You should be able to give a detailed description of the steps a Turing Machine would take to determine if an input word is in a language.

Examples: page 315 #2b-d.

Part IV – Algorithm Development and Analysis
You should be to create and analyze an algorithm.

Examples: page 9 #3, 5, pages 12-3 #1, page 88 #3

Part V – Recursive Algorithms
You should be able to give the recurrence relations for a recursive algorithm. Bonus points can be earned if you properly put the recurrence relation into closed form.

Examples: pages 34-5 #1-4.

Part VI – Algorithm choices
You should be able to give, for each of five situations, a highly efficient algorithm to solve the problem stated. Each problem will first require you to decide if it is better to sort some or all of the data and then process the data, or just process the data directly.