## Exam Format:

* Short Answer Questions
* Algorithms Questions

# COSC 1435

Study Guide for Exam 1

* + reading pseudocode and answering related questions
  + writing pseudocode and developing flowcharts

***Make sure you study exercises discussed in lectures***

# Exam Topics

## Algorithms

1. What is an algorithm?
   1. An algorithm is a set of instructions for a person or a computer to follow, very specific
2. Pseudocode
   1. What is pseudocode?
      1. Pseudocode is code for programmers to read and not computers
   2. Pseudocode primitives and conventions
      1. Basic code structures and basic variable ideas
3. Using and naming variables
   1. Lowercase first letter and every other word in name capital kindaLikeThis
4. Using logical operators
   1. AND, OR and NOT
      1. And (both are true) Or (only one is true) Not(the opposite is true)
   2. Combining conditions
      1. Combine the operators to make a more complicated condition
5. Fundamental control structures
   1. Sequential logic structure
      1. You can only have else and else ifs after ifs
   2. Selection structure (Decision logic structure)
      1. If…Else...End If
         * If yes do this else do something else
      2. If ...Else If…. Else ...End If
         * Or if yes do something, else do something eles
   3. Repetition structure (Loop logic structure)
      1. While…End While loop
         * If true do this until not true
      2. Do…while loop
         * Do this one time before checking
      3. What is a sentinel value?
         * Values that gets checked.
6. Flowcharts
   1. Using proper flowchart symbols for algorithm representation
      1. Use proper flowchart to show operations, commands and inputs/outputs
7. *Representing control structures in flowcharts and pseudocode*

## Introduction to Computers and Programming

1. Main memory
   * Bits and bytes
     + Bit is a 1 or a 0
     + Byte is 8 1’s or 0’s
   * Memory organization
     + Memory is stored in the ram stored in hexadecimal form.
2. Binary operators & logic gates
   * Boolean operations
3. Computer architecture
   * Memory Ram input and output.
   * Using logic gates in storing and processing data
     + Logic gates use Boolean operations through 1’s or 0’s or true or false
   * von Neumann architecture
     + CPU control unit and logic unit accessing the memory unit and outputting device
4. Stored-program concept
   * Instructions and data are stored in memory and the CPU grabs this information
5. What is machine language?
   * Computer language that a computer can read (binary)
6. What is the compiler?
   * The compiler takes higher level coding language and converts it into machine language
7. Program Execution
   * Machine Cycle (Fetch, Decode, Execute)
     + Fetch information
     + Decode the information
     + Decode and replace the information