CSC 2430 - What You Should Already Know (in C++)

1. How to use the problem solving process to develop an algorithm to solve a problem.
   a) Know the software development process
   b) Be able to pseudocode

2. Input and Output in C++
   a) Using `cout <<` for output
   b) Output formatting for integers
   c) Output formatting for strings
   d) Optional: Use `fixed`, `showpoint` and `setprecision()` with floating point numbers
   e) Using `cin >>` for input
   f) How to enter information separated by whitespace

3. Arithmetic in C++
   a) Priorities: ( ) * / + -
   b) Integer division vs. floating point division
   c) Math functions from `<math.h>`

4. How to declare and use constants

5. Converting and casting data types
   a) Implicit casts
   b) Explicit casts

6. Selection statements
   a) `if ( )`
   b) `if ( ) else`
   c) nested `if ( ) else`
   d) `switch ( )`

7. Repetition statements
   a) `while ( )`
   b) `do ... while ( )`
   c) `for ( . . . ; . . . ; . . . )`

8. How to declare and use functions
   a) Function prototypes and interfaces
   b) Modular programming fundamentals
   c) Testing of functions
   d) Functions which return a value (and those that do not)

9. Value parameters
   a) Passes the value of a variable or expression in the actual parameter list
   b) The value of the variable *is unchanged* by the calling function

10. Reference parameters
   a) Pass the memory location of the variable in the actual parameter list
   b) The value of the variable *is unchanged* by the calling function
   c) Know when to use value and when to use reference parameters

11. Strings
   a) string built-in data type

   Optional:

   b) Arrays of char

      Functions: `strcpy( ), strcmp( ), strcat( ), strlen( )`

12. Arrays
   a) Array input and output
   b) Array manipulation
   c) Passing arrays to/from a function

   Optional;

   d) Searching an array (sequential and binary search)
   e) Sorting an array (selection sort, bubble sort)