PIC10A Introduction to Programming Tentative Schedule of Lectures

Approximately 5 lectures on Chapter 2

1. Hello world; cout; variables; assignment
2. Fundamental types (int, double, bool, char); casting using static_cast; limitation of numeric types (overflow, underflow);
3. Casting; round-off error; arithmetic and math library; const keyword
4. Cin/cout; the string class
    - indexing with operator[] and at
    - length, substr, push_back, pop_back
    - find, rfind, concatenation (+)
5. Getline; input buffer; formatted output
    - cin.ignore(), cin.get(), cin.unget(), cin.peek(), cin.fail()
    - setw, fixed, set_precision

Approximately 6 lectures on Chapter 3 & 4

1. Decisions; logical operators;
    - If, if-else, else if
    - <, >, ==
2. Nested branches; logical operator (and, or, not); input validation;
3. Loops (while, for, do-while); hand-tracing
4. More with loops
    - Nested loops
    - break, continue
5. Random number generator and loop algorithms
    - rand(), srand()
    - Processing inputs
    - Find min/max value, compute sum/average, count matches, etc.

Approximately 3 lectures on Chapter 5

1. Functions
    - function signatures, function definitions, function comments
    - void, return keywords
    - parameters and arguments
    - scopes, forward declaration
2. References and const correctness
    - when to pass by value
    - when to pass by reference
    - when to pass by reference to const

Approximately 3 lectures on Chapter 6

1. std::vector class
    - at, operator[], empty, size, clear, push_back, pop_back
2. Arrays
3. Two-dimensional vectors and arrays

Approximately 3 lectures on Chapter 9 -- classes

1. Classes
    - Class interfaces, public, private categories

    - member variables and member functions
    - constructors and constructor initializer lists
    - mutators and accessors
    - const correctness for member functions
2. Default values
    - for functions
    - for member functions
    - source code organization, separate compilation

Approximately 3 lectures on Chapter 7 (structures not covered)

1. Pointers, memory allocation (new, delete), pointer arithmetic
2. Dynamic arrays, array pointer duality law
3. Memory leak, dangling pointers.

Approximately 2 lectures on Chapter 8 streams

1. File streams
    - std::ifstream, std::ofstream, random access,
2. String streams
    - std::istringstream, std::ostringstream, conversion between numbers and strings