**CMPT 151**

**Overview of Programming & Software Development Concepts**

Syntax:

1. Assignment
2. Arithmetic Operators: + - \* / %
3. Comparison Operators: >, <, ==, >=, <=, !=
4. Conditionals: if, if/else, if/else if/else
5. Loops: while, for, for each
6. Calling methods (like Java API: String, Math, Random)
7. Variables: fields, parameters, local variables
8. Collections: ArrayLists, arrays, HashSets, HashMaps

Imperative programming:

1. Storing single values (variables)
2. Storing lists of values (arrays or similar collection)
3. Methods (writing new & using existing)
4. Conditionals
5. Loops
6. Using basic arithmetic & logic, including comparison operators
7. Input & output (console/terminal and/or file I/O)

OO-Programming: Organizing the above constructs into…

1. Classes
2. Constructors
3. Methods
4. Fields
5. Inheritance
6. Aggregation
7. Polymorphism (methods & variables)

GUIs & Event-driven Programming:

1. Event handlers: wait for some event to happen
2. Listeners: listen for a particular event
3. Challenge: same event-handling code may be executed under many different conditions

Software Development:

1. Requirements: What are you going to develop?
2. Design: How will organize your code? What algorithms will you use?
3. Development: How will you implement the design into executable code?
4. Testing: Does the implementation meet the requirements?
5. Maintenance: Are there new features/bugs that need to be added/fixed?