CS 247 – Software Engineering Principles

Joanne Atlee

[jmatlee@uwaterloo.ca](mailto:jmatlee@uwaterloo.ca)

DC 2337 Mondays 4:00-5:50pm

http://www.student.cs.waterloo.ca/~cs247

# Introduction

* Software engineering
  + Collection of principles, practices, techniques, processes, tools
  + Aim to:
    - Improve software quality
    - Improve developer productivity
    - Improve scalability to larger systems
* Object-orientation review
  + Allows you to deal with objects as you would in the real world
    - Better affinity between user-defined types and real world types
  + Abstraction
    - In the form of ADT’s, interfaces
  + Reuse of code
    - Inheritance
    - Composition
    - As a useful data type
  + Encapsulation / Information hiding / Locality
    - Putting individual design decisions into their own module
  + Effective decomposition
    - Each object is complete enough that it can be considered independently designed, implemented, tested
    - Solo programmer can work with a simpler problem
    - Separation of concerns
  + Polymorphism
    - Extensible client code