CSCI 234 – Introduction to Software Engineering
Spring 2012

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Class: MWF 1:10–2:20 in PPHAC 101
Office Hours: R 9:30–12:30 (or by appointment)

Course Description

This course is an introduction to professional software development using object-oriented techniques. Topics include using object-oriented design as a tool for building correct and maintainable software systems, test-driven development, best-practices in object-oriented design and development informed by component-based engineering, advanced Java features, and languages for communicating design.

Course Objectives

At the completion of this course, you should be able to:

- Implement object-oriented designs with proper use of interfaces, abstract and inner classes, exceptions, iterators, and generics.

- Master foundational ideas in object-orient development including polymorphism, encapsulation, and inheritance.

- Design class hierarchies to meet software-level specifications.

- Design and implement effective test cases.

- Communicate software design using UML.

- Evaluate object-oriented designs using best-practices, support for local reasoning, and metrics of coupling and cohesion.

- Recognize common design idioms and patterns in existing software and use design patterns to aid in the design of new software.

- Use pre- and post-conditions for method-level specification as well as class/representation invariants for verification.

Texts
"Head First Design Patterns" by Freeman & Freeman.
"Object-Oriented Design Using Java" by Skrien.

Schedule

Topic	Weeks
OO Basics	1
Uses of Inheritance	1
Writing Good Methods	2
OO Analysis	1
OO Design	2
Formal Methods and Verification	1
Testing and Validation	1
Design patterns	2
OO Software Case Studies	2

Attendance Policy

This course does not have a rigid attendance policy in the sense that there is a rule describing the number of lectures that you must attend. However, please do not take this as a license to never show up to class; I expect you to be at each class meeting. Your attendance in lecture is important (beyond the usual reasons) in that homeworks, due dates, and readings will be assigned in person during lecture.

Academic Honesty Policy

Please read and understand the College's Academic Honesty Policy (which you can find in the Student Handbook). I will let you know what materials are appropriate to use for reference for specific assignments when they are assigned.

Since collaboration with your colleagues will be an important part of your careers, collaboration is permitted on all graded assignments (with the exception of exams). However, unless I state otherwise, you must turn in your own copy of each assignment *in your own writing*. If the ideas/algorithms expressed in an assignment are not entirely your own (*i.e.*, you worked with one of your colleagues), you must include a note stating who you worked with and the percent contributions of everyone who contributed to the work (including your contribution).

Grading Policy

There are four components to your grade:

- **Homework:** Homework will be handed out throughout the semester; assignment details and due dates will be describe upon being distributed. **Weight: 20%**

- **Projects:** Throughout the semester, you will be assigned large design and programming projects. **Weight: 40%**

- **Tests:** There will be two midterm exams given during the semester. **Weight: 20%**

- **Final:** A cumulative final exam will be given during the regularly scheduled time (see Amos for the final exam schedule). **Weight: 10%**

Other policy matters:

- **Grading Scale:** I will use the standard 90-80-70-60 scale with pluses and minuses to assign grades.

- **Late Homework:** I will accept homework beyond its due date within reason and with justification.

- **Exam Absence:** If you are going to miss an exam due to conflict, you must let me know before the exam. If you miss an exam due to some other circumstance, you must let me know as soon as possible and provide me with documentation. Valid circumstances include events like illness and family trauma. Invalid circumstances are events like hangovers and faulty alarm clocks.

- **Academic Accommodations:** Please let me know immediately if you have any disability that requires accommodation.

This syllabus is subject to change.