CSCI 334 – Spring 2006
System Design

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Please do not call me at home

Course Description

A project-oriented study of the ideas and techniques required to design and implement a computer-based system. Topics include project organization, interface design, documentation, and verification.

Goals

- Design large software projects using patterns and other standard techniques

- Effectively test software components

- Document specifications and code using standard tools

- Work in teams to design and develop software projects

Required Texts

- *The Pragmatic Programmer* by Andrew Hunt and David Thomas

- *Design Patterns: Elements of Reusable Object-Oriented Software* by Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides

Responsibilities

Your attendance is expected at each class meeting. You are also responsible for the contents of reading assignments, handouts, lectures, and class email.

If you have a disability that may affect your participation in this course, please contact me immediately to discuss academic accommodations.

Graded Materials

Journal

Most Fridays during the semester will be used for discussion of readings, in particular from *The Pragmatic Programmer*. As preparation for these discussions, you will be given reading assignments and corresponding journal entries.

Your "journal" will not be a single entity, but instead it is simply a collection of short, informal writings that are supposed to help you consider the topics before we have our discussion. You should bring the entries for a given week to class Friday and refer to them as appropriate during our discussion. At the end of the class period, I will collect your entries and grade them over the weekend.

Because there will be numerous journal entries during the semester, I will use two types of grading systems. For some entries, the grades will be binary – a one if you submitted a acceptable entry and a zero otherwise. As much as possible, I will read the entries more closely and give feedback. Your grade from these entries will be a check, plus, or minus meaning "meets expectations," "exceeds expectations," and "below expectations," respectively.

Paper

One of the challenges you will face in the "real world" is the need to learn on your own. In particular, you will encounter theories and software products that help design software. Through this course, I hope to expose you to a variety of these tools and help you develop proficiency in as many as possible.

Each student in the class will be responsible for one piece of software development "technology." You will be required to learn this technology and then present a class session on its usage. In addition, you will produce a written tutorial for your topic that will be utilized by the rest of the class. In addition to traditional feedback, this tutorial will be peer-reviewed, and you will have the opportunity to respond to their suggestions.

Possible topics include:

- Use cases

- UML

- Aspect-Oriented Programming

- doc++ or doxygen

- Unit testing / xUnit

- Software Life Cycle

- Rational Unified Process

- CVS

- Refactoring

- Extreme Programming

Midterm

One midterm will be given during the semester. The *tentative* date for this test is Friday, March 31.

Projects

There will be three projects during the semester. The class will all work together to produce one final submission for each. In addition to the code, you will also be responsible for various forms of documentation.

- The first project will be a simple game. The purpose of this project is to give you experience working in a group. While the final code will still be considered in your grade, the most important portion of this project will be the final write-up. You will be asked to critique the group's performance and plan changes for the other projects.

- Project 2 will be a data-driven project. I will be the client, and you will work with me to develop the application. As with the first project, part of the deliverables will be a written evaluation of how the project progressed.

- Because estimation and risk analysis are part of the design process, the details for the final project will be developed in class. You are expected to apply all the design techniques learned during the semester and execute a successful project. Consequently, your grade will be solely determined on the product created.

Grading

Journal	25%
Paper/Presentation	20%
Projects	
Project 1	10%
Project 2	15%
Project 3	20%
Midterm	10%

All grades will be calculated on the standard scale using pluses and minuses.