CSCI 334: System Design and Implementation

Syllabus – Spring 2012

Ben Coleman
coleman@cs.moravian.edu
214 PPHAC

Office Hours: MWF 10:15-11:30
or by appointment
Office Phone: 610-625-7781

Course Description

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

Course Goals

Upon completion of this course, a successful student will be able to:

- Design large software projects using patterns and other standard techniques.
- Communicate both orally and in writing with clients, colleagues, and supervisors.
- Document specifications and code using standard tools.
- Work in a team to design and develop software projects.

Required Texts

In addition to the following required texts, supplementary readings may be given periodically during the semester.

- *Object-Oriented Software Engineering Using UML, Patterns, and Java*, third edition by Bernd Bruegge and Allen H. Dutoit
- *The Pragmatic Programmer* by Andrew Hunt and David Thomas

You should expect to spend about an hour before each class session working through the readings. This means reading the text for detail and working to learn vocabulary – not just skimming through the material before class.

Graded Material

Below is a brief description of each of the assignments for the course. In class I will hand out detailed descriptions of the requirements and grading guidelines.

- **Letter of Application to the Course** – You will write a formal letter requesting admission into the course. The purpose of this assignment is to begin our discussion of targeted technical writing. In class we will review drafts of this letter, and then you will produce a final submission.
- **Cover Letter and Resume** – In this assignment you will create the appropriate materials to submit for a job application. You will select the job to which you apply. You will submit multiple drafts of these documents, but only the final version will be graded.
- **Journal and Homework Assignments** – Informal journals will be used to explore ideas from the texts - roughly one for each of the chapter that we cover. Traditional homework assignments will be used to practice the techniques developed in the course.
- **Software Engineering Philosophy Readings** – Beyond the two required text books listed above, you will read portions of eight other books that discuss a wide variety of approaches to software development. For each book you will write a two-to-three page response to a prompt for the book.
- **Project Performance** – Throughout the semester we will be working on jAmaseis, seismologic software with a target audience of seismology educators. Our clients for this application are members of the Incorporate Research Institutions for Seismology (IRIS) Education and Outreach (E&O) group. Your overall performance on the project will be assessed by the other students in the course and by me. This grade is not based on whether or not the project is completed successfully, but on your level of contribution. You will not be involved in every aspect of the project, but you are expected to contribute in a timely manner when given assignments. As evidence of your involvement, you will maintain a work log throughout the semester.
- **Final Analysis Paper** – Instead of a final exam, you will write a final paper due to me by 11:30 A.M. on Tuesday, May 1, 2011. In this paper, you will critique the project and discuss how the content of the course was utilized in the project. Further details will be distributed near the end of the semester.

Grade Determination

- Letter of Application to the Course – 5%
- Cover Letter and Resume – 10%
- Journal and Homework Assignments – 15%
- Project Performance – 30%
- Software Engineering Philosophy Readings – 25%
- Final Analysis Paper – 15%

All grades will be computed on the standard scale using plusses and minuses

Course Policies

- **Responsibilities** – Your attendance is expected at each class meeting. You are also responsible for the contents of reading assignments, handouts, class activities, and class email.
- **Late Policy** – I understand that life sometimes gets in the way of getting work done. Consequently, late assignments will be accepted without penalty in the class after the assignment was due. However, this policy should not be used as a crutch, and if you frequently use it I will deduct from your grade. After the next class session, late work will not be accepted unless there are exceptional circumstances.
- **Extensions** – In a similar vein, I am generous with extensions on work if you approach me *before* the day the assignment is due.
- **Academic Honesty** – Except on tests, you are *encouraged* to discuss the material and work with other students in the course. This policy does not allow you to copy another student's work verbatim – you must produce your own code or write-up of the material. Work together to learn the concepts, but keep in mind that you are ultimately responsible for the material on the tests.
- **Disabilities** – If you have a disability that may affect your performance in this course, please contact me immediately to discuss academic accommodations.

Course Schedule

Date	Reading	Topic
M Jan 16		• Day 1 Activities
W Jan 18	• OOSE Ch 1: pp. 3-25	• Introduction to Software Engineering • Peer Review of Letters of Application
F Jan 20	• OOSE 2.1 - 2.4.2: pp. 29-59	• UML Use Cases and Class Diagrams
M Jan 23	• OOSE 2.4.3 - 2.5: pp. 59-72	• UML Interaction and Activity Diagrams
W Jan 25	• OOSE Ch 3: pp. 77-114	• Project Organization and Communication
F Jan 27	• OOSE Ch 4: pp. 121-153	• Requirements Elicitation
M Jan 30	• OOSE Ch 5: pp. 173-206	• Analysis
W Feb 1	• OOSE Ch 6: pp 223-255	• Decomposing the System
F Feb 3	• OOSE Ch 7: pp. 259-289	• Addressing Design Goals
M Feb 6	• PP Preface: pp. *xvii-xxiv* • PP Ch 1: pp. 1-23	• The Pragmatic Philosophy
W Feb 8	• PP Ch 2: pp. 25-69	• A Pragmatic Approach
F Feb 10	• PP Ch 3: pp. 71-106	• The Basic Tools
M Feb 13	• PP Ch 4: pp. 107-136	• Pragmatic Paranoia
W Feb 15	• PP Ch 5: pp. 137-170	• Bend, or Break
F Feb 17	• PP Ch 6: pp. 171-199	• While You Are Coding
M Feb 20	• PP Ch 7: pp. 201-222	• Before the Project
W Feb 22	• PP Ch 8: pp.223-259	• Pragmatic Projects
F Feb 24		• No Class: CUR Dialogues
M Feb 27		• Test
W Feb 29		• jAmaseis Project
F Mar 2		• No Class: SIGCSE
M Mar 5 – F Mar 9		• Spring Break
M Mar 12 – F Apr 27		• jAmaseis Project
F Apr 6 – M Apr 9		• Easter Break

The details of this syllabus and schedule are subject to change based on our progress through the material.