

SE2890: Software Engineering Practices

Dr. Walter Schilling

Spring, 2011-2012

1 Administrative Details

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Course Web Page: <https://myweb.msoe.edu/~schilling/msoe/Spring2012/se2890/se2890.shtml>
Credits: 3.0
Meeting Times: MW 8:00 AM-8:50 TBD(Section 011)
TF 13:00 AM-13:50 TBD(Section 021) (Class)
F 8:00 AM-9:50 AM CC03 (Section 011)
W 12:00 AM-13:50 AM CC03 (Section 021)(Lab)

2 Catalog Description

This course provides an introduction to the discipline of software engineering for Non-majors. Students will be exposed to the practices employed in determining requirements for the software which is to be developed. From the requirements specification, problem domain analysis will lead to a high level design. After review, the high level design will be used to create detailed designs and implement the software on a desktop machine. These activities will be reinforced through a team project and culminating with group oral presentations.

3 Outcomes

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

1. Recognize the risks of software failure and appreciate the importance of a disciplined software development approach.
2. Compare and contrast distinct models for software development.
3. Employ rudimentary configuration management tools and processes across a software development project
4. Verify through the practice of review that specified requirements are accurate, unambiguous, complete and consistent
5. Apply UML modeling tools to represent all phases of a software engineering project
6. Conduct efficient and effective software reviews, and measure the effectiveness of those reviews
7. Perform rudimentary software testing using both manual and automated mechanisms
8. Demonstrate independent learning to accomplish tasks for which all of the details may not have been taught in previous courses.
9. Work effectively in a team environment on a short-term software development project
10. Communicate design and implementation judgment to others through a team-based oral presentation
11. Demonstrate effective written and oral communications skills

4 Pre-Requisites

- SE-1021
- CS-2851

5 Textbook

Gary McGraw, *Real Time UML: Third Edition Advances in the UML for Real-Time Systems* Bruce Powel Douglass, Addison-Wesley, 2004.

6 Other References

Introduction to the Team Software Process Watts S. Humphrey, Addison-Wesley, 2000, ISBN 0-201-47719-X.

Intelligence Unleashed: Creating LEGO NXT Robots with Java Brian Bagnall, Variant Press, 2011, ISBN 978-0-9868322-0-8.

7 Computer Software Resources

This course has been constructed assuming your laptop is using the standard MSOE image. If your laptop has been modified from this image, there is the potential of difficulties arising during the course of this class. If you have modified you image, you are responsible for maintaining normal operation with the provided software, which may or may not be compatible with your installation.

In any case, no matter the configuration of your laptop or the state of your laptop, you are responsible for completing all assignments on time. **Absolutely no extensions will be granted due to Computer difficulties.**

8 Class Participation and Activities

Lecture will be a mix of instructions, discussion, and code examples. Participation is expected.

Class attendance is mandatory. If you are unable to attend a class for any reason, please inform the professor as soon as possible.

Excessive, unexcused absences may result in a grade reduction.

Attendance is required at all lab sessions. It is expected that you will be working on the assigned lab assignment through the lab period unless the assignment is completed and submitted. You must stay for the entire lab period unless the current assignment is complete and turned in. This includes both the software that is to be written / developed as well as the written report on the lab activity. Failure to abide by this policy may result in a grade reduction.

9 Grading

Grades will be based upon Midterm Exams, Lab Work, Article Reviews, and a comprehensive final exam.

Midterm Exams (1)	25%
Labs	40%
Homework and Quizzes	15%
Final Exam	20%
Total	100%

Grades will be based upon the following grading scale

A	92-100
AB	89-91
B	82-88
BC	80-81
C	71-79
D	65 - 70
F	Below 65

10 Late Submission Policy (Non-Homework)

Assignments are due to the designated time and place. Late submissions will not be tolerated and may result in a 10% per business day late penalty from the due date until the assignment is received.

11 Early Submission Bonus

In order to encourage timely completion of assignments, an early submission bonus will be available for all lab assignments. Lab assignments submitted 48 hours or more in advance of the due date may receive a 10% early submission bonus. Lab assignments submitted 24 hours or more in advance of the due date may receive a 5% bonus.

12 Grading Challenges

Any grading challenges, unless specifically noted by the professor, must be submitted in writing within 5 days of the assignment being returned to the student. The writing shall clearly delineate the problem with the assignment as well as justification for the change in grade.

13 Student Integrity

All students are expected to abide by MSOE's policy on student integrity. If at any point in the semester you have a question about an assignment, please come discuss it with me.

Violations of this policy will be dealt with seriously, and may result in significant penalty, up to and including failure of the course. In specific, violations of student integrity on a lab assignment will most likely result in failure of the course.

In specific, it is expected that you will perform your own work and not work as a group or a team unless specifically allowed by the instructor. To be in possession of another student's source code or design or to submit an assignment which matches in whole or in part another student's assignment shall be considered a violation of academic integrity.

13.1 Student Integrity Policy (as stated in the MSOE Handbook)

As an institution of higher learning, MSOE is committed above all to the educational development of its students as responsible and principled human beings. As such, MSOE is accountable to all whom it serves and by whom it is scrutinized. The university has a priority interest in promoting personal integrity and in ensuring the authenticity of its graduates' credentials.

The university is similarly mindful that the professions, business and industry are concerned with ethical behavior, no less than the professional practice of their members and employees. It follows, therefore, that the students of MSOE preparing for professional careers and leadership roles that are founded on responsibility and trust must observe and be guided by the highest standards of personal integrity both in and out of the classroom. The expectations of the university with respect to academic and classroom integrity are reflected in, but not limited to, the following guidelines:

1. Each student must recognize that even a poorly developed piece of work that represents his or her best efforts is far more worthwhile than the most outstanding piece of work taken from someone else.
2. Assignments prepared outside of class must include appropriate documentation of all borrowed ideas and expressions. The absence of such documentation constitutes plagiarism, which is the knowing or negligent use of the ideas, expressions or work of another with intent to pass such materials off as one's own. It is an act of plagiarism if a student purchases a paper or submits a paper, computer program, or drawing claiming it to be his/hers when he/she did not write it.
3. Each student should consistently prepare for examinations so as to reduce temptation toward dishonesty.
4. A student may not share examination answers with others for the purpose of cheating, nor should he or she, intentionally or through carelessness, give them an opportunity to obtain the same.
5. Academic dishonesty or cheating includes the act of obtaining or attempting to obtain credit for academic work through the use of any dishonest, deceptive, or fraudulent means. Cheating at MSOE includes but is not limited to:
 - Copying, in part or in whole, from another's test or homework assignments, worksheets, lab reports, essays, summaries, quizzes, etc.
 - Copying examinations and quizzes, in whole or in part, unless approved by the instructor.
 - Submitting work previously graded in another course unless this has been approved by the course instructor or by departmental policy.

- Submitting work simultaneously presented in two courses, unless this has been approved by both course instructors or by the department policies of both departments.
- Communicating electronically (unless approved by the instructor) during examinations with the intent to seek or provide answers.
- Attempting to present as the students own work, materials or papers purchased or downloaded from the Internet.
- Any other act committed which defrauds or misrepresents, including aiding or abetting in any of the actions defined above.
- Claiming credit for a group project or paper when the individual student made little or no contribution to the groups product.
- Accessing reference documents during a computerized exam or quiz unless approve by the course instructor.

6. A student of integrity will not support, encourage or protect others who are involved in academic dishonesty in any way, and will furthermore attempt to dissuade another student from engaging in dishonest acts.

13.2 Lecture Note and Handout Availability

To the greatest extent possible, all lecture notes and handouts will be made available on the web following class / lab. These materials are made available for your learning enrichment. These materials, however, are governed by the Copyright Laws of the United States and are not to be distributed beyond the MSOE environment. This includes, but is not limited to, lecture notes and slides, lab assignments, homework problems, sample solutions, source code examples, and quizzes.

Failure to adhere to this policy may result in a reduction of final course grade.

14 Cell Phone Policy

To enhance learning and reduce disruptions, cell phones will be turned off during class. If a cell phone rings during class, one point will be subtracted from your final grade. Two additional points will be subtracted from your final grade for each additional offense. If your cell phone rings during a quiz or exam, the final grade for the course will be reduced by one half letter grade (i.e. from A to AB). For each additional offense during an exam, the final grade will be reduced by one full letter grades (i.e. from A to B).

Under no circumstances may a cell phone be used as a calculator during exams or quizzes.

15 Laptop Usage

No laptop usage is allowed during lecture periods unless specifically requested by the instructor.

16 Course Drops

Under no circumstances will the professor drop you from this course. If you desire to withdraw from this course, it is your responsibility to complete the process in the appropriate fashion.

17 Examinations

Midterm exams will be held during class meetings unless other arrangements are made prior to the exam. NO MAKEUP EXAMS will be given without advanced reason excepting documented medical or family emergencies.

18 Final Exam

Per university policy, "A final examination is required in every credit course except in courses designated by the various departments, and that exam will be administered in the two-hour block designated. The type of examination should be in agreement with that specified in the departmental course outline and announced to the class near the beginning of the quarter. Final examinations may not count more than 40% of the final grade."

The final exam for this course will be during finals week at a time to be determined by the registrar.

19 Homework / Quizzes

Quizzes may be given weekly, either at a lecture or lab meeting. Homework may also be assigned from time to time. The lowest quiz score will be dropped. **Absolutely no make-up quizzes will be given.**

A homework assignment will be worth one quiz grade unless otherwise noted.

20 Reading Assignments

The syllabus indicates reading assignments. Students are expected to read the indicated pages prior to meeting that day.

21 Course Coverage, Section 011

Tentative. Subject to change and revision based upon class progress.

Week	Day	Date	Topic	Reading
1	Monday	March 5	Introduction to Software Failure	
1	Wednesday	March 7	Software Development Processes	Chapter 1, pgs. 29-42.
2	Monday	March 12	Requirements and Use Cases	Chapter 5, pgs 277 - 305
2	Wednesday	March 14	Requirements and Use Cases	Chapter 5, Pages 305-329
3	Monday	March 19	Configuration Management	Handout - Configuration Management
3	Wednesday	March 21	Introduction to Software Reviews and Inspections	Handout - Reviews
4	Monday	March 26	Object Domain Analysis	Chapter 6, pages 331-358
4	Wednesday	March 28	Object Domain Analysis	Chapter 6, pages 358-398
5	Monday	April 2	Defining Object Behavior	Chapter 7, pgs 399-443
5	Wednesday	April 4	Defining Object Behavior	Chapter 7, pgs 443-471
			Easter Break	
6	Monday	April 16	Design and Design Patterns	Chapter 8, pgs 473-476, Chapter 9, pages 527-547, 555-562
6	Wednesday	April 18	Midterm Exam	
7	Monday	April 23	Detailed Design and Java Threading	Chapter 10, pages 589-603, 610-614
7	Wednesday	April 25	Implementing State Charts in Source Code	Handout
8	Monday	April 30	Code Reviews	Handout
8	Wednesday	May 2	Software Testing	
9	Monday	May 7	Software Testing	
9	Wednesday	May 9	Project Tracking and Analysis	Handout
10	Monday	May 14	Applications to Embedded Systems	
10	Wednesday	May 16	Course Evaluation and Final Review	

22 Course Coverage, Section 021

Tentative. Subject to change and revision based upon class progress.

Week	Day	Date	Topic	Reading
1	Tuesday	March 6	Introduction to Software Failure	
1	Friday	March 9	Software Development Processes	Chapter 1, pgs. 29-42.
2	Tuesday	March 13	Requirements and Use Cases	Chapter 5, pgs 277 - 305
2	Friday	March 16	Requirements and Use Cases	Chapter 5, Pages 305-329
3	Tuesday	March 20	Configuration Management	Handout - Configuration Management
3	Friday	March 23	Introduction to Software Reviews and Inspections	Handout - Reviews
4	Tuesday	March 27	Object Domain Analysis	Chapter 6, pages 331-358
4	Friday	March 30	Object Domain Analysis	Chapter 6, pages 358-398
5	Tuesday	April 3	Defining Object Behavior	Chapter 7, pgs 399-443
5	Friday	April 6	Good Friday	No Class
			Easter Break	
6	Tuesday	April 17	Design and Design Patterns	Chapter 8, pgs 473-476, Chapter 9, pages 527-547, 555-562
6	Friday	April 20	Midterm Exam	
7	Tuesday	April 24	Detailed Design and Java Threading	Chapter 10, pages 589-603, 610-614
7	Friday	April 27	Implementing State Charts in Source Code	Handout
8	Tuesday	May 1	Code Reviews	Handout
8	Friday	May 4	Software Testing	
9	Tuesday	May 8	Software Testing	
9	Friday	May 11	Project Tracking and Analysis	Handout
10	Tuesday	May 15	Applications to Embedded Systems	
10	Friday	May 18	Course Evaluation and Final Review	

23 Lab Topics - Section 011

Week	Day	Date	Lab Topic
1	Friday	March 9	Java Programming Review
2	Friday	March 16	UML Case Tools and Class Design
3	Friday	March 23	Requirements Solicitation and Use Case Construction
4	Friday	March 30	Use Case and Requirements Peer Review
5	Friday	April 6	Good Friday - No Class
			Easter Break
6	Friday	April 20	Project Design
7	Friday	April 27	Implementation - Week 1
8	Friday	May 4	Code Review and Implementation - Week 2
9	Friday	May 11	Testing
10	Friday	May 18	Oral Presentations and demonstrations. Robot Olympics

24 Lab Topics - Section 021

Week	Day	Date	Lab Topic
1	Wednesday	March 7	Java Programming Review
2	Wednesday	March 14	UML Case Tools and Class Design
3	Wednesday	March 21	Requirements Solicitation and Use Case Construction
4	Wednesday	March 28	Use Case and Requirements Peer Review
5	Wednesday	April 4	Object Domain Analysis Development
			Easter Break
6	Wednesday	April 18	Project Design
7	Wednesday	April 25	Implementation - Week 1
8	Wednesday	May 2	Code Review and Implementation - Week 2
9	Wednesday	May 9	Testing
10	Wednesday	May 16	Oral Presentations and demonstrations. Robot Olympics