

CS 460 Capstone Design and Professional Practice

Course Description

P: CS360 and Senior Standing. Student teams will participate in the design and implementation of a substantial software project. Topics include practical issues of software development, quality assurance, and deployment, as well as computing ethics and professional practice.

Course Goals and Learning Outcomes

CS 460 is a continuation of CS360 and covers a variety of topics related to the practice of software engineering. The goals of this course are: (1) To increase your software development skills by completing a substantial software project for a real client working as part of a team; (2) To increase your technical presentation skills; (3) To increase your independent learning skills; and (4) To gain awareness of ethical issues and expectations for professional conduct.

1. Apply UML to construct class, state and interaction models (a, i, k)
2. Apply a subset of product metrics to a software model (a, i, k)
3. Apply a subset of process and project metrics to support project management (a, i, k)
4. Construct a software project schedule and track its progress (a, i, k)
5. Perform simple estimates of software cost and level of effort for an object-oriented project (a, i, k)
6. Define common software quality assurance activities (a, i, k)
7. Conduct a formal technical review (f, k)
8. Define common elements of a software configuration management (SCM) system (a, i, k)
9. Utilize an SCM repository for project artifacts (a, i, k)
10. Apply software engineering principles and skills to complete a team-oriented software project (a, b, c, d, i, k)
11. Independently investigate a software engineering topic and prepare a suitable presentation (a, f)
12. Independently investigate a ethical or professional conduct topic and prepare a suitable presentation (e, f, g, h)

Instructor

R. L. Sedlmeyer
Office: ET 125e
Phone: 481-6187
Email: sedlmeye@ipfw.edu
Office Hours: TR 3:00 – 4:30 PM or by appointment

Course Web Site

All materials for this course are available at <http://webct.ipfw.edu>. The web site contains PowerPoint slides, class announcements, the course syllabus, calendar, and all assignments for the course.

Books and Software

1. Required Texts

- a. Roger S. Pressman, Software Engineering, A Practitioner's Approach, McGraw Hill, Sixth Edition, ISBN 0-07-285318-2.
- b. Richard A. Spinello and Herman T. Tavani, Readings in CyberEthics, Jones and Barlett publishers, Second Edition, ISBN 0-7637-2410-6.

2. Software

We will be constructing various models of the software using Rational Rose Enterprise Suite 7.0. This software is available in ET 111.

Grading

Grades are based on the following items.

- 60 % Team Project
- 12 % Chapter Presentation from Pressman
- 08 % Paper Presentation from Spinello/Tavani
- 20 % Assignments associated with UML, chapters, and papers

The instructor reserves the right to make adjustments to the number of assignments and weights.

For credit on a given assignment, it must be submitted by the published due date and time. Late assignments will not be accepted.

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	0% - 59%

Assignment Submission

Assignments must be submitted electronically via WebCT. Hard-copy may also be requested. Be certain to check that any code you submit is virus-free. Code containing viruses will be assigned a grade of 0.

Attendance Policy

Attendance is a University requirement and I expect you to attend every class. I will be taking attendance and your grade may be adversely affected by any absences. In the event you cannot attend class you are responsible for obtaining any course-related information or materials.

Academic Honesty Policy

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Unless otherwise stated, the weekly assignments must be done individually. The following activities associated with code development are not permitted unless explicitly expressed by the instructor:

- Seeking assistance in the development of algorithms
- Seeking assistance in the development of code
- Seeking assistance in debugging code

Seeking assistance means asking someone to show or tell you how to complete a task, working together to complete a task, or copying someone's work. The penalty for the first violation this policy is a score of 0; a subsequent violation will result in a grade of 'F' for the class and the placement of a memo describing the infraction in the CS Department's files. For non-majors the memo will be forwarded to the student's major department.

Accommodations for Students with Disabilities

If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb Union, Room 113, telephone number 481-6658) as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site for SSD at <http://www.ipfw.edu/ssd/>

Help from the Center for Academic Support and Advancement (CASA)

The SPOT Course-Specific Tutoring: Make your study time not only more effective, but also more efficient by signing up for free tutoring available in the SPOT in Kettler G21 (next door to the Writing Center). You are entitled to 2 free hours per week of one-to-one, course-specific help in understanding concepts, practicing the application or explanation of material being learned, and developing effective test-taking strategies. Make all appointments online through TutorTrac at www.ipfw.edu/casa. If you don't see a tutor available for your class, contact us in Kettler G21!

Drop-in tutoring is also available for math (schedule on website) and a few other subjects. If you need help with study skills in general, drop by the SPOT to view our self-paced tutorials or make a one-to-one appointment. Information about STEPS (Student Technology Education ProgramS) classes can be found the CASA website. Also, check with your instructor about whether Supplemental Instruction (group study) is available for this class. Questions? Call 481-5419.

SPOT Hours Spring 2008: Monday-Thursday 8 a.m. to 8 p.m.; Friday 8 a.m. to 4 p.m.

The WRITING CENTER: Save time and write better papers or presentations for any class through free one-to-one or small group consultations in The Writing Center, Kettler G19 (next door to the SPOT). Bring assignments, questions, ideas, and a draft (if you have one). Consultants can help you get started, write more clearly, revise, edit, and cite sources responsibly. Come as you begin and as you revise. Drop-ins are welcome if time is available, but appointments, made online through TutorTrac, receive preference. For TutorTrac, online consulting, and resources to make your writing process easier, go to www.ipfw.edu/casa/writing. Questions? Call 481-5740.

Writing Center hours Spring 2008: M-Th 10 a.m. to 6 p.m.; F 10 a.m. to 2 p.m.; Su 1 to 5 p.m.

Tentative Schedule

Tuesday	Thursday
Jan 15 Course overview; Team planning session	Jan 17 Introduction to UML Project status reports
Jan 22 Class modeling	Jan 24 Class modeling
Jan 29 State modeling	Jan 31 State modeling Class modeling assignment
Feb 5 Interaction modeling	Feb 7 Interaction modeling State modeling assignment
Feb 12 Interaction modeling	Feb 14 Project Review 1
Feb 19 Chapter 15	Feb 21 Chapter 22 Interaction modeling assignment
Feb 26 Chapter 23	Feb 28 Chapter 24 Chapter 15-22 assignment
Mar 4 Chapter 26	Mar 6 Chapter 27 Chapter 23-24 assignment
Mar 11 Spring Break	Mar 13 Spring Break
Mar 18 Paper 1 Chapter 26-27 assignment	Mar 20 Project Workshop
Mar 25 Paper 2 Paper 1 assignment	Mar 27 Project Review 2
Apr 1 NO CLASS	Apr 3 NO CLASS
Apr 8 Paper 3 Paper 2 assignment	Apr 10 Project Workshop
Apr 15 Paper 4 Paper 3 assignment	Apr 17 Project Workshop
Apr 22 Paper 5 Paper 4 assignment	Apr 24 Project Workshop
Apr 29 Paper 6	May 1 Project Review 3

Paper 5 assignment	Paper 6 assignment
May 6 Final Presentations 1:00 – 3:00 pm	

Schedule Key

Instructor presentation

Student presentation

Individual assignment

Team assignment

ABET Program Learning Outcomes

The following learning outcomes are defined by ABET, our accrediting agency, for computer science programs.

- (a) An ability to apply knowledge of computing and mathematics appropriate to the discipline
- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- (d) An ability to function effectively on teams to accomplish a common goal
- (e) An understanding of professional, ethical, legal, security and social issues and responsibilities
- (f) An ability to communicate effectively with a range of audiences
- (g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
- (h) Recognition of the need for and an ability to engage in continuing professional development
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- (k) An ability to apply design and development principles in the construction of software systems of varying complexity.