

# 54-893 Senior Seminar in Software Engineering

Spring 2005 T-Th 2:30-3:45 FWO 113

## General Information

Instructor	Office	Phone/Fax
<a href="#">Dr. Barbara Boucher Owens</a>	Mood Bridwell 142B	Phone: (512) 863-1513
<a href="mailto:owensb@southwestern.edu">owensb@southwestern.edu</a> <a href="http://www.southwestern.edu/~owensb">www.southwestern.edu/~owensb</a>	M 11-11:50, M,T,Th 1-1:50, W 3-4 Other times by appointment and whenever I'm in!	Fax:: (512) 863-1535

**On-Line Schedule:** The current and frequently updated course schedule can be found on line.

Current project sites:	<a href="http://www.southwestern.edu/natfacid/">http://www.southwestern.edu/natfacid/</a>	<a href="http://gtownrealty.com">gtownrealty.com</a>
Email team and Client	<a href="#">Mail Team for NATFACID</a> Client	<a href="#">Mail Team for gtownrealty</a> Client

## Catalog Description

Introduction to techniques and theories for the development of large software systems. This course will fulfill the capstone requirement in Computer Science. Topics include: software design and quality, ethics, professional issues, and the study of current software engineering trends, theory, and practice. A major semester project is expected from each student, as well as significant class participation and presentation.

**Prerequisites:** 21 semester hours in the major at the 200-level or above including 54-453, 54-473, 54-483, and consent of instructor. (Spring)

## Course objectives

This course aims to give students both a theoretical and a practical foundation in software engineering. In the theoretical part, students will learn about the principles and methods of software engineering, including current and emerging software engineering practices and support tools. In the practical part, students will become familiar with the development of software products from an industry perspective, including generation of appropriate documents, under tight schedules and limited resources. Because this is a writing component course, there will be heavy emphasis on written communication skills.

## Required Text:

*Software Engineering: A Practitioner's Approach (Sixth Edition)*. Roger Pressman. Addison Wesley, 2004. ISBN 0073570729.

*User-Centered Website Development: A Human-Computer Interaction*. Approach. Daniel D. McCracken and Rosalee J. Wolfe. Pearson Education, Inc, 2004. ISBN 0-13-041161-2.

*The Mythical Man-Month: Essays on Software Engineering, Anniversary Edition (2nd Edition)*, Frederick Brooks, Addison-Wesley Pub Co; ISBN: 0201835959 (on reserve)

Killer Robot (on line)

**Accommodations:**

Southwestern University will make reasonable accommodations for persons with documented disabilities. Students should register with the Office of Academic Services, located in Cullen Hall 336. Professors must be officially notified by the Academic Services Coordinator that documentation is on file at least two weeks before the accommodation is needed.

**Grading Policy :**

Assignment/Component:	% of grade	Individual or Team	Approximate Due Date																
Software Review	5%	Individual or pairs	January 27																
		Team																	
Major project	45%	Team	Milestones vary (see project)																
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Documentation/User's Manual: 4/28	5%																		
Journal	10%	Individual	Weekly submission																
Peer Evaluation: 4/28	10%	Individual																	
Class Participation	5%	Individual																	
MFAT exam	5%	Individual																	
Midterm Exam	10%	Individual																	
<b>Final Exam April 26</b>	10%	Individual																	

**Late/missed work:** No late work/make-up work will be accepted.

**Honor code:** The honor code applies to the book review and the exams. The typical University-wide honor code expectations (e.g., regarding plagiarism and cheating) will be in force.

**Disclaimer:** This syllabus is a guideline. Particulars may be discussed and changed in class.

**Attendance:** Any unexcused absence will result in a grade reduction. More than two absences of any type may result in withdrawal from the course. An excused absence must be arranged in advanced with the instructor.

**Grading:** The team project will consist of the project itself, the SRS (Software Requirements Specification), the SDS (Software Design Specification), team meeting reports, the testing plan & verification, and the user documentation and user's manual. Note that these constitute 45% of the course grade, and are team grades (all members of the team will receive the same grade for these components of the team project, based on the overall quality of the work). Your team will need to meet on a weekly basis regarding your project; a record of these meetings will be included in your weekly journal entries and blog. You will need to keep detailed notes of all meetings with your project client as well.

## **Software:**

TBA

## **Course topics** (*including but not limited to*)

- **Software Engineering** The software crisis, principles of software engineering, programming-in-the-small vs. programming-in-the-large
- **Software process:** The software lifecycle, the waterfall model and variations, introduction to evolutionary and prototyping approaches
- **Project management:** Relationship to lifecycle, project planning, project control, project organization, risk management, cost models, configuration management, version control, quality assurance, metrics
- **Teamwork:** Team dynamics, communication skills, sharing work, fulfilling obligations
- **User considerations:** Human factors, usability, internationalization, user interface documentation, user manuals
- **Software requirements:** Requirements analysis, requirements solicitation, analysis tools, requirements definition, requirements specification, static and dynamic specifications, requirements review.
- **Software design:** Design for reuse, design for change, design notations, design evaluation and validation
- **Implementation:** Programming standards and procedures, modularity, data abstraction, static analysis, unit testing, integration testing, regression testing, tools for testing, fault tolerance
- **Maintenance:** The maintenance problem, the nature of maintenance, planning for maintenance
- **Documentation:** Documentation formats, tools, internal documentation

**Other topics:** Formal methods, tools and environments for software engineering, role of programming paradigm, process maturity. Ethical considerations