CECS 543/643
Advanced Software Engineering
Course Description and Syllabus
Fall 2015

Professor: Dr. Birgit Penzenstadler
Class meetings: Tue/Thu 7pm-8:15pm at LA5-147
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Office Hours: Tue/Thu 5:30-6:30pm

COURSE DESCRIPTION

This course aims to equip students to develop techniques of software-intensive systems through successful requirements engineering, design, testing, maintenance and evolution, and project and quality management. Students build on their basic software engineering knowledge by extending it with specific techniques for maintenance, evolution, dependability, reliability, safety, security, and resilience.
Lecture 2 hours. Semester long team project plus final exam. Letter grade only (A-F).

I. PREREQUISITE TOPICS
CECS 343 or other basic knowledge about the principles of software engineering and the software lifecycle. Sufficient programming skills for the team development project.

II. COURSE TOPICS
This course exposes students to the advanced problems of software engineering. After mastering the basics of requirements engineering, design, and testing, we explore maintenance and evolution, project and quality management, as well as the engineering for distinct quality characteristics.
In detail, the course covers:
1. A recapitulation of software engineering process models
2. A recapitulation of the basic techniques for requirements engineering and design
3. Project management
4. Process and project metrics
5. Estimation for software projects
6. Project scheduling
7. Risk management
8. Maintenance and reengineering
9. Dependability of systems
10. Reliability engineering
11. Safety engineering
12. Security engineering
13. Resilience engineering

III. COURSE OBJECTIVES
- Overall: Advanced knowledge in software engineering.
- A knowledge of and an ability to apply:
  - Quality assurance techniques
  - Requirements management techniques
  - Software project planning
  - Quality engineering techniques

Sample assignments:
- Performing a review of a requirements specification.
- Developing a safety analysis for a system under development.
- Developing a project plan for a software system to be developed.

- Developing a quality assurance plan for a software project

V. METHODS FOR ASSESSING STUDENT LEARNING

o   A semester-long software engineering project, composed of individual, written assignments (to practice and demonstrate the skills from the course objectives above) and the implementation of a software system.
o   A final examination.

VI. FURTHER READING

- Software Engineering: A Practitioner's Approach. 7th Ed. Roger Pressman.
  Specifically chapters 24-29
- Software Engineering by Ian Sommerville. Publisher: Pearson.
  Specifically chapters 10-14

COURSE SYLLABUS

This is Advanced Software Engineering. It is assumed that you know all about process models, UML, use cases, requirements engineering, low level design, architectural design, software patterns and component based engineering.

Texts I'm Using: You are not required to buy it, you'll get lecture slides.
- Software Engineering: A Practitioner's Approach. 7th Ed. by Roger Pressman. Publisher: McGraw Hill
- Software Engineering by Ian Sommerville. Publisher: Pearson.

Supplemental texts: (available online at Safari Tech Books)
- Any Unified Modeling Language Guide
- Several papers will be reviewed (ACM Digital Library / IEEE Xplore)

Most class notes will be available on Beachboard.

Course Requirements:

Event	543 Points	643 Points	543 Scale	643 Scale	
Midterm Exam	100	100	90 -100	94 -100	A
Quizzes & Reviews	100	100	80 - 89	87 - 93	B
Final Exam	100	100	70 - 79	80 - 86	C
Project	200	200	60 - 69	74 - 79	D
Research Paper (643 only)		150	< 60	<74	F

Exams:
Make up exams will be given only with valid medical excuse.

Homework Assignments:

Approximately 5-7 assignments are to be completed. May include review of technical papers from IEEE, ACM, etc. An unspecified number of pop quizzes will be given at random intervals.

Semester Project:

A substantial software development project shall be undertaken by students. Teams shall consist of at least 2 but no more than 3 students. No student shall work alone.

No late work accepted. Deadlines will be *strictly adhered to*. However, the nature of software development is cyclic, and all documents may be resubmitted for regarding until the end of the semester. The project will require a number of deliverables, not the least of which are requirements, design and specification documents. Also, the project requirements may demand that the software be written in languages and environments you may not be familiar with. While some minimal instruction may be provided in these topics, you may be required to perform substantial outside learning.

Academic Honesty:

Cheating and *plagiarism* will not be tolerated in this course. Any individual caught cheating on quizzes, homework, lab projects, or the final exam will be punished to the full extent allowed under University regulations. Plagiarism on papers or assignments is not acceptable and work that is plagiarized will not receive credit. Plagiarism is considered cheating. <u>Note</u>: any time another person's work is used without giving them proper credit, it is considered plagiarism and cheating.

At a minimum, any student caught cheating will receive no credit for the work concerned, and will receive a reduction of one letter grade from their final course grade. The official CSULB Policy on Cheating and Plagiarism can be found here: **http://web.csulb.edu/divisions/aa/catalog/current/academic_information/cheating_plagiarism.html**

Reasonable Accommodation:

Individuals with disabilities who need assistance or modification to the University's programs and/or activities should inform the person(s) responsible for these programs and/or activities immediately upon knowing that such modification is necessary. Individuals registered with the California Department of Rehabilitation may be eligible for assistance through that agency. Students may be eligible for assistance through the Office of Disabled Student Services, located in Brotman Hall 270, telephone (562) 985-5401. For evaluation and service, contact that office directly. If the modification or accommodation provided is inappropriate or insufficient, you may seek the assistance of the Office of Equity and Diversity, located in University Student Union 301, telephone (562) 985-8256. If a reasonable accommodation has been requested but was not provided, the individual may access the complaint resolution process.

Electronics in Lecture:

You may use computer or tablets during lecture. Please do not use phones. If you are giggling at your computer, I will stop lecturing and ask you to come to the front of class and show us all what is so funny.

Failure is an Option:

Every semester some students in this class get C and D grades. Sometimes they even get an F. If you skip class, slack on the assignments or project, or cheat, this will happen to you. I have no problem giving C, D or F to graduate students.

COE Tutoring Center Announcement

The College of Engineering Tutoring Center offers free tutoring for many lower and upper division engineering courses in MAE, CECS, CECEM, CHE and EE. Tutors are available Monday through Friday during the fall and spring semesters between the hours of 9:00am-6:00pm in EN2-300. Visit the website for detailed tutoring schedules:
http://web.csulb.edu/colleges/coe/views/essc/academic_success/engineering_tutor.shtml#asp_ETP