CECS 445 Syllabus: Software Project Management & Testing

"Where Software Engineering Meets Business Environments."

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Office Hours: Available Upon Request
Units: 3
Prerequisites: CECS 343
Structure: Tu-Th, 11 – 12:15 = Lectures
Tu-Th, 12:15 – 1:15 = Status Tag-Ups

References: Software Engineering: A Practitioner's Approach. 8th Ed. Roger Pressman

Purpose: This course continues the introduction to software engineering students received in CECS 343 but focuses on the software development lifecycle in action. This course exposes students to **concepts not found in any other CS course in the department**. **Software development is engineering but it is also a business** and proper project management techniques along with strategic software testing are essential to project success. Graduates today are expected to be proficient throughout the software lifecycle as testing represents as much as 40% of the software development effort.

Furthermore, students will be expected to **"do well by doing good."** The capstone project will be a real-world business application within the Long Beach community that either: a.) aids the operations of a small business suffering in the economic downturn, b.) provides logistics, awareness and/or support services for COVID-19 health & safety, or c.) aids organizations in their implementation of social justice initiatives. Students will cultivate client relationships & architect requirements/design/implementation to client needs.

Outcome: The goal of the class is ultimately to have students better armed with a meaningful, tangible and practical technical experience to **make them more attractive candidates in the job market**. If done well, this experience will lead to the development of a self-contained software product with a true value proposition, having applied real-world software management techniques while navigating diverse team dynamics.

Description: The concepts of software project management. Software product and process metrics, team organization, diversity and dynamics, estimation and scheduling techniques for software projects, software development risks. The concepts of software testing as applied throughout the development lifecycle. Quality concepts, review techniques, quality assurance, testing strategies for procedural, object-oriented, web-based and mobile applications. Unit level testing: black-box testing, glass-box testing, code coverage, testing platforms. Integration testing. Regression testing.

Grading:
30% *Final Project Code & Testing* (i.e., use-vases, scripts, etc.)
20% *Final Project Presentation & Artifacts* (i.e., PowerPoint slides, user manual, etc.)
30% *Weekly Status Reports* (i.e., course concepts applied in business rhythm/format)
20% *Individual Performance* (i.e., final exam, participation, 360-degree assessment)

Rhythm: Students will be expected to form groups of 3 – 4 members and this group will serve as one's project team for duration of the semester. The first two weeks of the course will be focused on doing customer discovery for selecting a real-world project and will involve 10 interviews. Furthermore, weekly status reports will be due on Friday of each week (excluding first week), with format discussed in weekly tag-up sessions.

Curriculum: Tentative and can adjust depending on speaker availability.

Date	Topic(s)	Chapter(s)
1/19	Syllabus & Course Intro	N/A
1/21	Software Engineering, Process Structure, Process Models	2 – 4
1/26	Agile Development, Human Aspects of Software Engineering	5 – 6
1/28	Requirements Modeling	8 – 11
2/2	Software Design Concepts	12 – 18
2/4	Product Metrics	30
2/9	Project Management Concepts	31
2/11	Process & Project Metrics	32
2/16	Estimation for Software Projects	33
2/18	Project Scheduling	34
2/23	Risk Management	35
2/25	Maintenance & Re-Engineering	36
3/2	Quality Concepts	19
3/4	Review Techniques	20
3/9	Software Quality Assurance	21
3/11	Software Testing Strategies	22
3/16	Testing Conventional Applications	23
3/18	Testing Object-Oriented Applications	24
3/23	Testing Web Applications	25
3/25	Testing Mobile Applications	26
3/30	Spring Break: No Class	N/A
4/1	Spring Break: No Class	N/A
4/6	**Guest Speaker:** *Andrew Rubinger, Apple*	N/A
4/8	**Guest Speaker:** *Mishaal Aleem, NASA*	N/A
4/13	Security Engineering	27
4/15	Formal Modeling & Verification	28
4/20	Software Configuration Management	29
4/22	Software Process Improvement & Emerging Trends	37 – 38
4/27	**Guest Speaker:** *Daniel Carroll, DoD*	N/A
4/29	**Guest Speaker:** *Ashley Fernandes, Intuit*	N/A
5/4	Final Project Pitches	N/A
5/6	Final Exam Prep Session	N/A