

CEN5016: Software Engineering (3 credit hours) Spring 2018

T R 03:00 PM - 04:15 PM

HEC 0111

Instructor

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Office Hours: Tues & Thurs, 6:00-7:00 PM or by appointment

Office Location: HEC 328

Note: There are no teaching assistants.

Overview

There are alarming rates of software implementations that result in failures. For example, in 2009, the

Standish Group reported that 44% of software system implementations were challenged and another 24% completely failed. There are many reasons for this including unsatisfactory project leadership, poor project team motivation, unstable user requirements, insufficient project risk management, underestimation of project costs, inadequate change control procedures, and unrealistic customer expectations. IEEE identifies the following factors:

- Unrealistic or unarticulated project goals
- Inaccurate estimates of needed resources
- Badly defined system requirements
- Poor reporting of the project's status
- Unmanaged risks
- Poor communication among customers, developers, and users
- Use of immature technology
- Inability to handle the project's complexity
- Sloppy development practices
- Poor project management
- Stakeholder politics
- Commercial pressures

Software engineering is the application of scientific and engineering principles to the development of large software systems. This course is an introduction to concepts, principles, activities, methods, and processes used as the basis for a disciplined and structured approach to specifying, designing, and implementing programs using software engineering methodologies. The goal of this course is to explore software engineering design principles and best practices with emphasis on abstraction, modularity, and modeling. An emphasis of this course is a team-oriented software development project using software engineering principles.

The work for this course will consist of independent and team-oriented problem-solving as well as class discussions aimed at learning about and applying sound software engineering practices. Areas that will be covered include requirements engineering, evaluation of alternate designs, cost trade-offs, software management, software quality, standard components and patterns, maturity models, agile development, relevancy of systems engineering and enterprise architecture, and future trends in software engineering.

Course Goal

The goal of this course is to understand the advanced concepts of software engineering and apply them to solve a specific problem while working on a team-oriented software project. Project work will closely

emulate processes one would perform in industry. In addition, students will be required to do independent peer-reviewed research on software engineering topics.

Course Objectives

1. To introduce the fundamental and advanced concepts, methods, and standards applied to software engineering and the resulting artifacts produced by large-scale software development projects.
2. To introduce the student to the discipline and experience of team-oriented software development.
3. To introduce the basic techniques and tools for estimating software development costs as well as size and effort.
4. To introduce basic principles, techniques, and tools for software project management, software quality management, and security engineering.
5. To expose students to peer-reviewed research in understanding concepts and trends in software engineering.

Pre-requisites

Graduate status or advanced undergraduate standing in CS or CpE (having had COP 4331), together with a strong working knowledge of at least one of OOPL; e.g., C++, Java, or Ada. Work-related software developmental experience is desirable.

Grading

The final grade will be based on attendance and participation (5%), two research assignments (22%), a team-based software design project (63%), and a final exam (10%). The team-based software design project grade will consist of presentations, evaluation of formal documentation submissions, and assessment of the final product.

I will use the following scale for final

grading: A – 90% and above

B – 80% to 89%

C – 65% to 79%

D – 50% to 64%

F – below 50%

On letter grades, I may use pluses (+) and minuses (-); and if the grade scale is skewed too low or too high, I may curve the final grades to compensate.

Sources

1. Required Text Book:

Software Engineering: A Practitioner's Approach, 8th Ed., by Roger S. Pressman, McGraw-Hill, 2001.
ISBN = 978-0-07-337597-7.

2. Library:

Use the UCF Library data bases and journals to access peer-reviewed literature.

3. Submitted research papers must follow one of the formal formats for citations and references (e.g. APA, IEEE, or Chicago Manuscript). These are published in various books as well as in on-line sites that can be used for further information.

General Class Policies

All deadlines are posted in advance and only excused late work is accepted.

Missing a deadline will result in a grade of zero. Should you need to reschedule due a University approved function, notify the instructor of record two weeks prior to the due date via email. You will need written documentation of the University sponsored event. Generally, your due date will be earlier than originally scheduled, not later. If in the beginning of the semester, you provide your instructor with a list of dates you will be absent, it will still be necessary for you to notify him/her again two weeks prior to your absence. Should you miss a due date because of a tragedy or serious illness, you must inform the instructor of record as soon as possible.

There are no extensions to the assignment deadlines for individual students for any reason. All due date changes are only made by the instructors and these changes will be posted to the course web site.

It is student's responsibility to make sure that his/her Knight's E-Mail and WebCourses accounts work properly.

All written assignments and due dates will be posted on WebCourses and submission of assignments will be through the upload feature of WebCourses.

Email

The best way to reach your instructor is by sending a brief email message. Phone calls or phone messages are recommended only during instructor's office hours, and are not a useful tool if you need an urgent response. Your emails should be sent through Knights E-Mail with the course number (**CEN5016**) in the subject line. Your emails should be brief and to the point, contain the full email thread, and should also be specific questions that were not answered in class or on the course web site.

Grade Disputes

If a student feels that his/her grade on an assignment is inaccurate, it is the student's responsibility to email the instructor within one week of the posting of the grade. Late requests or claims for a grade change will not be honored.

Schedule

The class schedule including assignments and announcements will be maintained on WebCourses. Students

should check the course Website several times a week.

Students with Disabilities

The University of Central Florida is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need accommodations in this course must contact the professor at the beginning of the semester to discuss needed accommodations. No accommodations will be provided until the student has met with the professor to request accommodations. Students who need accommodations must be registered with Student Disability Services, Student Resource Center Room 132, phone (407) 823-2371, TTY/TDD only phone (407) 823-2116, before requesting accommodations from the professor.

Academic Integrity

Plagiarism and cheating of any kind are severe breaches of the rules governing this class and will automatically result in an "F" grade. Please see the UCF Golden Rule for further information.

Right to Modify the Syllabus

The instructor reserves the right to modify this syllabus at any time.

Spring 2018 CEN 5016 Software Engineering Tentative Schedule

Week	Date	Topic
1	Jan 9, Tues	Introduction
		Project Team Assignments
	Jan 11, Thurs	Chapters 1-6
	Jan 12, Fri	Assignment 0 Due
2	Jan 16, Tues	Peer Reviewed Research – Renee Montgomery, UCF Library
	Jan 18, Thurs	Chapters 1-6
3	Jan 23, Tues	Chapters 1-6
	Jan 25, Thurs	Chapters 7 - 8
		Statement of Work Due
4	Jan 30, Tues	Chapters 9 Requirements Modeling
		Team Time
	Feb 1, Thurs	Chapters 10 - 11 Requirements Modeling
		Team Time
5	Feb 6, Tues	Project Management Plan (PMP)
		Chapters 31 - 33
		Research Assignment
	Feb 8, Thurs	Team Presentations - Requirements Modeling
		Project Management Plan (PMP) Due
6	Feb 13, Tues	Chapters 12-16 Design
	Feb 15, Thurs	Chapters 12-16 Design
		Software Requirements Specification (SRS)
7	Feb 20, Tues	Chapters 12-16 Design
	Feb 22, Thurs	Chapters 12-16 Design
8	Feb 27, Tues	Team Time
	Mar 1, Thurs	Team Presentation on Software Design
	Mar 4, Sun	Software Design Description (SDD)
9	Mar 6, Tues	Chapter 22 Testing Strategies
	Mar 8, Thurs	Chapter 36 Risk Management
		Peer Review Evaluations Due
10	Mar 13, Tues	Spring Break
	Mar 15, Thurs	Spring Break
11	Mar 20, Tues	Team Time
	Mar 22, Thurs	Chapter 19 - Quality Concepts
	Mar 25, Sun	Software and System Test Plan Due

12	Mar 27, Tues	Chapter 35 – Risk Analysis
	Mar 29, Thurs	Chapter 37 – Software Process Improvement
13	Apr 3, Tues	Chapter 27 Security Engineering
	Apr 5, Thurs	Team Time
		Peer Review Evaluation Feedback
	Apr 8, Sun	Research Assignment 2 Due
14	Apr 10, Tues	Team Time
	Apr 12, Thurs	Review for Final Exam & Team Time
15	Apr 17, Tues	Final Project Presentations – Software Acceptance Test
	Apr 19, Thurs	Final Project Presentations – Software Acceptance Test
		Final Time Sheets Due
16	Apr 26, Thurs	Final Exam 1:00 PM – 3:50 PM HEC 0111