Foundations of Software Engineering

CPSC 362-05 (12946), 362-06 (12947)

Spring 2018

Description & Objectives

Basic concepts, principles, methods, techniques and practices of software engineering. All aspects of the software engineering fields. Use Computer-Aided Software Engineering (CASE) tools.

Prerequisites

CPSC 301 or passing score on Examination in Programming Proficiency; CPSC 311; declared major/minor in CPSC, CPEN or CPEI.

Instructor

Beth Harnick-Shapiro M.A.

Phone: 949-354-2384 This is my Google Voice Number, so email if it is not between 8am - 10pm. (If I don't pick up, please leave a message. Please include your name, class and section.
Email: beth.harnick.shapiro@fullerton.edu
Office: CS 429 (To Be Confirmed)
Office Hours:
  Monday…………………….…..4:00 PM-5:30 PM in Fullerton
  Wednesday……………………...11:25 AM-1:00 PM in Fullerton
  & by appointment. *During final exam week, office hours are by appointment only.*

Meeting Information

Section 05 and 06
Room: CS 408
Time:
  Monday   ………….. …………9:30 AM-11:20 AM
  Wednesday……………..………....9:30 AM-11:20 AM

Important Dates

CSUF's Academic Calendar is posted online at «http://apps.fullerton.edu/AcademicCalendar/». The Academic Calendar contains all the campus closures and holidays you should be aware of.
CSUF's Admissions Calendar is posted online at «http://www.fullerton.edu/admissions/Resources/Calendars.asp». The Admissions Calendar contains all the major dates with respect to adding, dropping, and withdrawing from your classes.

Assignment	Section 05 - MW
Exam 1	February 14
Exam 2	March 21
Informal Demos	February 26 and April 9
Project	Final Submission - May 7
Presentation/Demo	April 30, May 2, May 7
Final	May 14 - Noon-1:50pm

Textbooks

Required

Pressman, Roger S. and Bruce Maxim. *Software Engineering: A Practitioner's Approach*, 8 Edition, McGraw-Hill, 2014. (ISBN-13: 978-0-07-802212-8, ISBN-10: 0-07-802212-6)

Student Edition - Resource Center (Quizzes, Chapter Summaries), Pressman & Associates, Inc., http://highered.mheducation.com/sites/0078022126/student_view0/index.html , 2017.
InformationCenter(ProfessionalResources),Pressman&Associates,Inc., http://highered.mheducation.com/sites/0078022126/information_center_view0/index.html , 2017.

Optional

Many popular technical books may be read online through the campus's subscription to Safari Books Online. From outside of the campus network, the campus library's WWW proxy will grant you access, «http://www.library.fullerton.edu/asp/ipcheck.aspx?url=http://proquest.safaribooksonline.com/?uicode=calstate». The Safari Books Online service can be accessed directly from any computer on the campus network, «http://proquest.safaribooksonline.com/».

Development Tool Resources

Students interested in using Microsoft® development tools may request a Dreamspark account at «http://dsreqform.ecs.fullerton.edu/». A student may, at no monetary cost, download full featured versions of Microsoft Visual Studio.

Students interested in using Apple® development tools can freely download Xcode through the App Store application bundled with OS X. Students may download Xcode directly from «https://developer.apple.com/xcode/».

A Debian-based GNU/Linux OS virtual machine ready for students use and Debian-style installation scripts are posted online at «https://gamble.ecs.fullerton.edu/resources/».

A CentOS-based shell server is available through secure shell (ssh) and secure file transfer protocol (sftp). The hostname is ecs.fullerton.edu. If your email address is malcolm@csu.fullerton.edu, then your username is ACAD\malcolm. If you are using a command-line ssh client, then your command to connect to ecs.fullerton.edu will be `ssh 'ACAD\malcolm@ecs.fullerton.edu'`. Your password is the same password as your CSUF Portal password.

Please consider adopting a package management system for your personal computer to facilitate adding, updating and removing the various software development tools you may wish to use.

- Apple OS X
    - MacPorts «http://www.macports.org/»
    - Fink «http://www.finkproject.org/»
    - Homebrew «http://brew.sh/»
- Microsoft Windows
    - Chocolatey NuGet «https://chocolatey.org/»
    - Cygwin «http://www.cygwin.com/»
    - Npackd «https://npackd.appspot.com/»
- GNU/Linux OS
    - dpkg «https://www.debian.org/doc/manuals/debian-faq/ch-pkgtools.en.html»
    - rpm «http://fedoranews.org/alex/tutorial/rpm/»

Learning Goals

1. Students will be able to translate an informal description of a problem into a precise requirements statement.
2. Students will develop and describe specifications for a software system.
3. Students will determine whether a program correctly meets its requirements, either through direct observation or the use of testing tools.
4. Students will demonstrate knowledge of a formalized software engineering process (e.g. spiral, waterfall, agile).
5. Students will deliver a clear oral presentation with an appropriate tone.
6. Students will design software exhibiting design best practices, such as clarity, structured programming, separation of concerns, and/or design principles and patterns

7. Students will produce clearly written and properly formatted documentation
8. Students will participate in a significant software project

G.E. Requirements

This class does not meet any CSU General Education requirements.

Course Outline

Please note that these dates are subject to change. For more details see the CPSC 362 Course Outline page.

1. The Nature of Software and Software Engineering (1, 2).
2. The Software Process (3, 4, 5).
3. Requirements Modeling (8, 9).
4. Object-Oriented Concepts, Class-Based Requirements Modeling, Introduction to UML (Appendix 2, 10, Appendix 1).
5. Human Aspects and Principles that Guide Practice and Modeling Behavior (6, 7, 11).
6. Design Concepts and Architectural Design(12, 13) **Demo 1**
7. Component-Level, Pattern Based Design (14, 16).
8. User Interface and WebApp and MobileApp Design (15 ,17, 18).
9. Quality Concepts in Software, Software Review Techniques, (19, 20, 21).
10. Software Testing Strategies and Testing Conventional Applications (22, 23).
11. Testing Object Oriented, Web, and Mobile Applications (24, 25, 26) **Demo 2**
12. Managing Software Projects - Project Management, Process and Project Metrics, and Estimation for Software Projects (31, 32, 33).
13. Project Scheduling, Risk Management, Software Process Improvement (34, 35, 37).
14. Demos and Presentations.
15. Review
16. Final Exam.

Technical Proficiency

Technical proficiency in programming and software engineering should correspond to the prerequisite(s) of the course. Students are expected to be intimately familiar with their development platform of choice and be able to write and debug code in C++ at a level of proficiency that corresponds to the prerequisites of the course.

Technical proficiency with information technology, such as, but not limited to, the use of web-based online services, sending and receiving electronic mail, and desktop computer file systems, is assumed.

Grading

Plus and minus grading is not used when determining final grades.

Final grades are computed by first finding the average score in each category described in the table below on the right. All scores are normalized to a scale of 0 to 100 before being averaged. The average score for each category is then used to compute the weighted average according to the weights in the second table below.

Grade	% of Total Points
A	90–100%
B	80–89%
C	70–79%
D	60–69%
F	Below 59%

Category	% of Final Grade
Online Quizzes	5%
Attendance/ Homework/In-Class Activities	15%
Exam 1	15%
Exam 2	15%
Final Exam	20%
Group Project	30%

Assignments

Programming and written assignments will be discussed in class and posted to the course website in advance of their due dates. Each assignment description will include the assignment and grading rubric. Reading assignments are posted on the course outline. It is the responsibility of the student to stay up to date with the reading and to take the online quizzes for each chapter assigned.

Written assignments must be typeset and presented in a professional manner. Presentation, spelling and grammar can be worth up to 30% of an assignment's grade.

All programming assignments must be written in a pre-approved programming language, unless specified otherwise. Coding style must conform to professional norms. At a minimum, code must be commented, have descriptive names for identifiers, and contain a comment at the top of each file with pertinent information such as the student's name, email address, and assignment name. A plain text README.TXT must be included with each assignment submission summarizing and documenting the work submitted. For students unfamiliar with coding style, Google's style guides are an excellent starting point, «https://github.com/google/styleguide», particularly their C++ style guide, «https://google.github.io/styleguide/cppguide.html».

At the start of the semester, the instructor will detail the platform and tools used to grade student assignments. It is the student's responsibility to ensure that the assignments execute to his or her satisfaction on the instructor's grading platform.

There are approximately:
- 10 lab activities
- 1 group project (3 milestones)
- 12 weeks of reading assignments

Exceptions are made on a case by case basis given enough time and evidence to weigh the merits of the application.

Attendance Policy

Attending class is mandatory. Missing class is not allowed unless it is excused by the instructor. Missing class as part of a documented accommodation is guaranteed to be excused. The ADA accommodated student must make a reasonable effort to coordinate any absences with the instructor.

Please keep in mind that this course will be run like many software teams; that means both your attendance and your participation in class activities are required for successful completion of the course. Plan to arrive on time and stay until the end of class. If you need to arrive late or leave early, please try to minimize disruptions.

Make Up Policy

Exams and quizzes cannot be taken after they have been given in class. Due to an act of nature, personal medical emergency, a family crisis, an act of terrorism, severe civil unrest, etc. students have 10 calendar days to petition the instructor to retake any exam/quiz or submit an assignment without late penalty.

Exceptions shall be made on a case by case basis, provided there is time to evaluate the merits of such an application.

Participation

In the context of this course, participation is defined as the following:
- Arriving to class prepared and on time.

- Taking notes.
- Actively listening to the lecture, participating in discussions, and asking questions when appropriate.
- Actively engaging with in-class activities.
- Annotating code listings and handouts.
- Bringing any required materials to class.
- When needed/desired, seeking assistance to complete assignments.
- Actively engaging in online forums before or after class.
- Barring an emergency, not leaving the class session early unless the instructor consents.
- Not distracting oneself or others with smartphones, games, online diversions, etc.
- Respecting and treating the instructor and the student's peers civilly.

Required Material

- A writing instrument
- 3x5 cards
- A notebook
- A USB memory stick
- A personal computer with the requisite development tools or regular access to a computer lab

Academic Dishonesty

Students are encouraged to assist one another and discuss the course materials with your peers. It is your responsibility to be aware of and follow the spirit of CSU Fullerton's academic honesty policy which can be found at
«http://www.fullerton.edu/senate/publications_policies_resolutions/ups/UPS%20300/UPS%20300.021.pdf
». Academic dishonesty will not be tolerated. The University Catalog and the Class Schedule provide a detailed description of Academic Dishonesty under *University Regulations*.

  By submitting work for evaluation, you acknowledge that you have adhered to the spirit of the university's academic honesty policy and that your submission is an original work by you unless otherwise directed to work in groups. Failure to follow the spirit of the academic honesty policy will result in a severely negative evaluation of the work in question and may result in involving the Department Chair and the Judicial Affairs office to seek a disciplinary remedy.

Students with Special Needs

Please inform the instructor during the first week of classes about any disability or special needs that you may have that may require specific arrangements related to attending class sessions, carrying out class assignments, or writing papers or examinations. According to California State University policy, students with disabilities must document their disabilities at the Disability Support Services (DSS) Office in order to be accommodated in their courses. Additional information can be found at the DSS website, by calling 657-278-3112 or email «dsservices@fullerton.edu».

Student Resources

Any student who wishes to discuss any concern may contact the assistant deans of the college. Assistant deans are student advocates who will help you navigate the university's policies and procedures and assist with resolving any conflicts.
Assistant Dean for Student Affairs Carlos Santana
CS-206A (657) 278-4407 «csantana@fullerton.edu»
Assistant Dean International Programs and Global Engagement Lillybeth Sasis
CS-206A (657) 278-4881 «lsasis@fullerton.edu»

Emergency Procedures

For your own safety and the safety of others, each student is expected to read and understand the guidelines published at «http://prepare.fullerton.edu/campuspreparedness/». Should an emergency occur, follow the instructions given to you by faculty, staff, and public safety officials. An emergency information recording is available by calling the Campus Operation and Emergency Closure line at 657-278-4444.

Instructional Continuity

Due to an event such as an epidemic or a natural disaster that disrupts normal campus operations, students must monitor the course Titanium site and their campus email address for any instructions and assignments that the instructor announces.

Laboratory Safety

Safety is no accident. Learning and following the appropriate safety practices and protocols is an integral part to all laboratory courses. Following the appropriate safety practices and protocols minimizes the chances of repetitive stress injuries, mishandling hazardous materials, and injury to self and others. Additional campus laboratory safety information regarding hazardous materials is online at «http://riskmanagement.fullerton.edu/laboratorysafety/».

Extra Credit

There are no opportunities for extra credit.

Recording & Transcription of Class Content

Recording class content is governed by UPS 330.230, «http://www.fullerton.edu/senate/publications_policies_resolutions/ups/UPS%20300/UPS%20330.230.pdf ». Each instructor must permit class content to be recorded or transcribed by students when mandated to do so by the Americans with Disabilities Act or by other federal or state laws. Any recording of class content is for private use and study and shall not be made publicly accessible without the written consent of the instructor and students in the class.

Course Rules & Classroom Management

Unless an agreement or accommodation is reached between the student and the instructor, these rules must be followed.

- Attendance at all regularly scheduled lecture and discussion section is mandatory.
- Do not eat during lecture.
- If it makes noise, silence it.
- Computer use is not allowed in lecture except for taking notes.
- The student is responsible to be aware of any course announcements including changes to due dates and requirements.
- Homework, programming assignments, etc. may not be submitted late.
- Third party work (code, artwork, etc.) may not be used in student work without prior instructor consent. Failure to gain and document instructor consent will be construed as willful academic dishonesty.
- When a third party's work is incorporated into student work after gaining instructor consent, failure to wholly document the work's origin, copyright and license will be construed as willful academic dishonesty.