

CpS 420 Software Engineering-EXP 01 Fall 2025

College of Arts and Science

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Office Hours

MWF		10:00-10:50am	Al 84
MW		1:00-1:50pm	Al 84
T		1:00-2:50pm	Al 84
TH		1:30-2:50pm	Al 84
F	(appt. only)	1:00-1:50pm	Al 84
MTWF	(appt. only)	12:00-12:50pm	Al 84

Required Materials

- *Modern Software Engineering* by David Farley. Boston, MA: Pearson Addison-Wesley 2022. ISBN-13: 978-0-13-731491-1.
- Lab fee: \$30 (required, used to purchase access to project support tools)

Course Description

An introduction to methodologies and tools for efficient design, development and testing of object-oriented software. Emphasizes current software engineering best practices for developing medium-to-large scale business systems, including requirements analysis and project management. Students apply the techniques in a semester-long team project. Credits 3. Prerequisite: CPS 301

Course Context

This course addresses the following learning outcomes of the computer science major:

CS1. Design and implement efficient solutions to problems in various domains.

CS3. Communicate technical information effectively, including software design and requirements documents.

CS4. Evaluate and assess software technologies for use in solving specific problems.

EXP Requirements

This course has been approved for EXP (Bruins Engage!) credit and addresses each of the five criteria for experiential learning: engagement, mentorship, challenge, ownership, reflection. **To receive EXP and course credit, students must satisfactorily complete all EXP assignments within the required timeframe, including:**

- Exit Survey
- Final summative reflection EXP questions with a grade of C- (28 out of 40) or higher
 - 150-word minimum for each of the four required elements.
 - Students may revise their summative reflection one time to meet the C-standard.
- Failure to complete any of the above will result in a **failing grade for the course.**

EXP Mentorship

As part of the EXP mentorship component, student groups will meet regularly with the course instructor during class time. Be prepared to discuss your contribution, progress, and obstacles during your time slot.

EXP Learning Outcome

The student will be able to describe and reflect critically over what has been learned, showing how faith integrates with learning and how learning will inform future personal and professional practices.

Course Goals

The primary goals of this course are to introduce students to the following concepts:

- The standard Software Development Lifecycle
- Asset Management Strategies
- Requirements Engineering
- Software Design

- Software Development Management Strategies
- Test Driven Design Strategies
- Continuous Integration / Continuous Deployment Strategies
- Developing Safety / Life - Critical Software Systems

Assignments

Quizzes will cover both lecture and reading material to gauge student understanding and ensure readiness for future material.

Exams are used to gauge both broad and deep understanding for course material and principles.

Project is a phased, semester-long project requiring teamwork, planning, coordination of responsibilities, documentation, and time management.

EXP assessments include graded discussions, reflection components of project phases, and a summative assessment.

Specifications: Assignments that do not meet minimum assignment specifications may be marked "unassessable" and be assigned a grade of F. Such assignments can be resubmitted using a late token.

Competency: Upon request, a student must be able to explain or modify his portion of an assessment. Failure to complete this task upon request will result in the assessment being marked "unassessable."

Grading

Qty	Item	Points	Total		
7	Quizzes	10-20	100	Scale: A 90-100% B 80-89% C 70-79% D 60-69% F <60%	
3	Discussions	10	30		
2	Exams	100	200		
2	Written Projects	50	100		
1	Project	650	650		
1	Summative Assessment	40	40		
Total Points:		1,170			

Course Policies

We will be following the "continuous delivery" model. Thus, you should have something in tested, runnable form before the deadline, even if not all the features work. For this reason, I do not accept late work. Work is due at the deadline. **Late work receives a 0.** Extensions may be purchased with [tokens](#).

[Professionalism](#)

[Emergencies](#)

[Handbook Policies](#)

[Attendance Policy](#)

[Accommodations for Students with Disabilities](#)

[Academic Honesty and Integrity Policy](#)

Generative AI Exceptions

Using generative AI for debugging, coding library information, coding tips, study tips, document templates, etc. is permissible if 1) you do not feed in course or textbook content (notes, instructions, solutions, etc.), 2) you do not copy large blocks of code (5+ lines of code), and 3) you document which AI tool was used, the prompts used, and the output.

[Testing Environment](#)

[Course Material Use](#)

Tentative Schedule

Week	Topic	Readings	Asgs
8/28–30	Introduction, Software Engineering	MSE: forward , preface Download forward, preface , chapter 1 Technology: Git and GitHub	Sat: Team Setup

9/2-9/6	Requirements Special Speaker	MSE: chapter 4 Technology: Django	Quiz 1
9/9-9/13	CFR, Working Iteratively	MSE: chapter 5 Technology: Docker	Tue: Requirements Project Sat: First Sprint
9/16-20	TDD, Clean Code	MSE: chapter 2 Technology: GitHub Actions	Quiz 2
9/23-27	<i>Special Speaker</i>	MSE: chapter 3 Technology: Terraform	Sat: Second Sprint Quiz 3
9/30-10/4	XP, Agile	MSE: chap. 6-7 Technology: Vue	Creation Discussion Quiz 4
10/7-11	Design Patterns	MSE: chapter 8 Technology: Ansible	Sat: Third Sprint Quiz 5
10/14-18	Design Patterns	MSE: chapter 9 Technology: Kubernetes	Midterm
10/21	<i>Fall Break</i>	Modeling	

10/23–25	CICD, Modularity	MSE: chapter 10 Technology: Deployment	Tue: Fourth Sprint Fall Discussion
11/4–11/8	Cohesion, Separation of Concerns	MSE: chapter 11 Technology: Backend Security	Quiz 6
11/11–11/15	Information Hiding and Abstraction	MSE: chapter 12 Technology: Testing	Sat: Fifth Sprint
11/18–11/22	Managing Coupling	MSE: chapter 13	Quiz 7 Redemption Discussion
11/25–11/29	<i>Thanksgiving Break</i>		
12/2–12/6	Dependability, Availability Engineering	MSE: chapter 14	Sat: Sixth Sprint Summative Assessment
12/9–12/13	Safety, Security Engineering, Software Product Lines	MSE: chapter 15	Thu: Exit Survey Sat: Audit and Analysis

12/16	8–9:10 a.m. <u>Final Exam</u>		
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