

CpS 420 Software Engineering—EXP Fall 2026

Syllabus

Instructor: Sarah Gothard, Ph.D.

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Office Hours

MWF	8:00-8:50am
MWF	10:00-10:50am
MWF	1:00-2:50pm
TTh	1:30-2:50pm
Th	9:30-10:50pm
Daily	(appt. only) 11:45am-12:50pm

Materials

- *Modern Software Engineering* by David Farley. Boston, MA: Pearson Addison-Wesley 2022. ISBN-13: 978-0-13-731491-1.
- (optional) *Working Effectively with Legacy Code* by Michael C. Feathers. Upper Saddle River, NJ: Prentice Hall Professional Technical Reference 2005. ISBN 0-13-117705-2.
- 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 time frame, 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 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.

The **Requirements Project** provides students with a real-world experience of gathering and documenting requirements for a project.

The **Technology Presentation** gives students the real-world experience of researching and describing a technology to a technical audience.

The **Analysis Project** requires students to analyze and document the security and architecture of a codebase that they did not create.

The **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.

Evaluation

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

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](#)

[University Emergencies](#)

[Class Cancellation Policy](#)

[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
Week 1 (1½) 8/27	Introduction, Software Engineering	MSE: forward , preface , chapter 1
Week 2 (1½) 9/1-9/3	Legacy Code	MSE: chapter 4
Week 3 (2½) 9/8-9/10	CFR, Working Iteratively	MSE: chapter 5
Week 4 (3½) 9/15-17	Requirements	MSE: chapter 2
Week 5 (4½) 9/22-24	TDD, Clean Code	MSE: chapter 3
Week 6 (5½) 9/29-10/1	Requirements presentation	MSE: chap. 6-7
Week 7 (6½) 10/6-8	XP, Agile	MSE: chapter 8
Week 8 (7½) 10/13-15	Midterm	MSE: chapter 9
Week 9 (8) 10/22	<i>Fall Break</i>	Modeling
Week 10 (9) 10/27-29	Design Patterns	MSE: chapter 10
Week 11 (10) 11/3-11/5	CICD, Modularity	MSE: chapter 11
Week 12 (11) 11/10-11/12	Cohesion, Separation of Concerns	MSE: chapter 12

Week 13 (12) 11/17–11/19	Information Hiding and Abstraction	MSE: chapter 13
11/22–11/28	<i>Thanksgiving Break</i>	
Week 14 (13) 12/1–12/3	Managing Coupling, Dependability, Availability Engineering	MSE: chapter 14
Week 15 (14) 12/8–12/10	Safety, Security Engineering, Software Product Lines	MSE: chapter 15
12/15	8–9:10 a.m. Final Exam	

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Course Summary:

Date	Details	Due
Sat Aug 29, 2026	Assignment Teams	due by 11:59pm
	Page Technology Presentations Signup	to do: 11:59pm
Sat Sep 5, 2026	Assignment Quiz 1	due by 11:59pm
	Page Review Portions	to do: 11:59pm
Sat Sep 12, 2026	Assignment First Sprint: Review	due by 11:59pm
Sat Sep 19, 2026	Assignment Quiz 2	due by 11:59pm
	Assignment Technology Presentation	due by 11:59pm
Sat Sep 26, 2026	Assignment Quiz 3	due by 11:59pm
	Assignment Second Sprint: Make Progress	due by 11:59pm
Sat Oct 3, 2026	Discussion Topic Creation and Computing	due by 11:59pm
	Assignment Quiz 4	due by 11:59pm
Sat Oct 10, 2026	Assignment Quiz 5	due by 11:59pm
	Assignment Third Sprint	due by 11:59pm
Tue Oct 13, 2026	Assignment Midterm Exam	due by 9:15am
Sat Oct 24, 2026	Discussion Topic The Fall and Computing	due by 11:59pm
	Assignment Requirements Project	due by 11:59pm

Date	Details	Due
Tue Oct 27, 2026	Assignment Fourth Sprint	due by 11:59pm
Sat Oct 31, 2026	Page Advice to Colleagues	to do: 11:59pm
Sat Nov 7, 2026	Assignment Quiz 6	due by 11:59pm
Sat Nov 14, 2026	Assignment Fifth Sprint	due by 11:59pm
Sat Nov 21, 2026	Assignment Quiz 7	due by 11:59pm
	Discussion Topic Redemption and Computing	due by 11:59pm
Thu Dec 3, 2026	Assignment Appoint Auditor	due by 11:59pm
Sat Dec 5, 2026	Assignment Sixth Sprint	due by 11:59pm
	Assignment Summative Assessment	due by 11:59pm
Thu Dec 10, 2026	Assignment Required Exit Survey	due by 9:15am
	Assignment Peer Accomplishments	due by 5pm
Sat Dec 12, 2026	Assignment Professional Development	due by 11:59pm
	Assignment Auditor: Audit and Analysis	due by 11:59pm
	Assignment Non-auditor: Audit and Analysis	due by 11:59pm
Tue Dec 15, 2026	Assignment Final Exam	due by 9:10am