CSE 403 Software Engineering

Course Introduction

Winter 2026

Today's Outline

- The CSE 403 staff
- What is software engineering
- Course overview and expectations
- Assignment 1 – project proposals

About me

Gail Alverson, Ph.D., UW Affiliate Professor

About our Wi26 TAs

Graham Cobden

Medha Gupta

Hannah Potter

Srimedha Thummala

Yixuan Wang

About Wi25 CSE 403 students

Let's hear about you!

So just what is Software Engineering?

Consider what you, a software engineer, must do to **deliver** a product/service that **delights your customer** on an ongoing basis

So just what is Software Engineering?

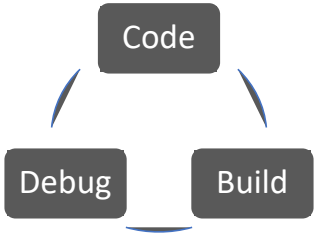
An **engineering discipline** concerned with the complete process of specifying, designing, developing, analyzing and maintaining a software system

Software engineering tasks include:

- Requirements engineering
- Specification writing and documentation
- Architecture and design
- Programming (Just one out of many important tasks! 🤯)
- Testing and debugging
- Deploying, operating, evaluating, refactoring and evolving
- Planning, teamwork and communication

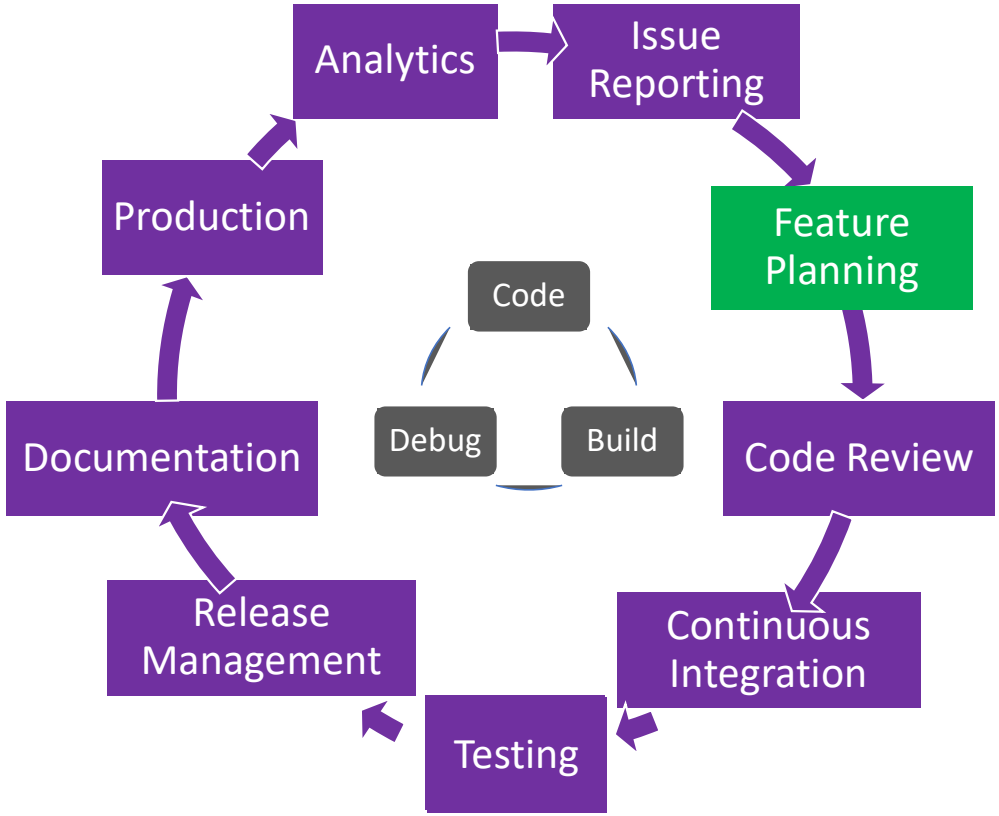
Software Engineering in practice

CSE intro-level courses focus on the inner loop of software development



Software Engineering in practice

Our focus in CSE 403 is largely the outer loop



MSFT, Big Code Summit, 2019

Why is Software Engineering important?

Software is everywhere -- our lives depend on it

Good software engineering allows us to **deliver**

Why is Software Engineering important?

It is the path to a successful product

- Decomposes a complex engineering problem
- Organizes processes and efforts
- Improves software reliability
- Improves developer productivity
- Improves delivery of a solution that delights the customer

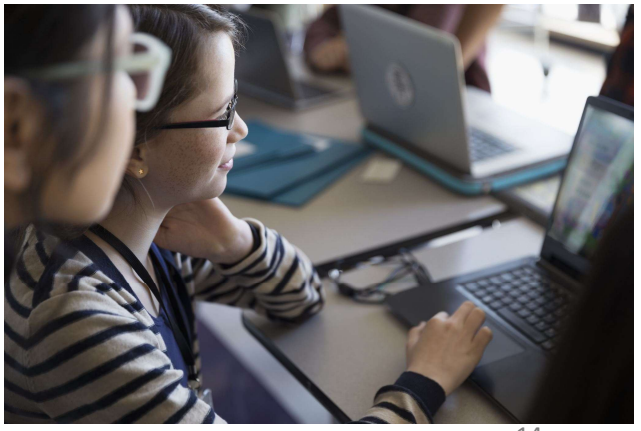
Course overview

Course overview: topics

- **Learn software processes, requirements, and specification**
  - Range of software development processes
  - Precise capture of requirements and specifications
- **Advance your software development skills**
  - Decompose a complex problem and build abstractions
  - Improve coding skills
  - Effectively use version control, build systems, and code review
  - Continuously develop and integrate code collaboratively
- **Get hands on experience with software testing and debugging**
  - Effective, complete, and automated tests
  - Modern testing and debugging techniques
- **Learn to deliver a significant product as part of a technical team**

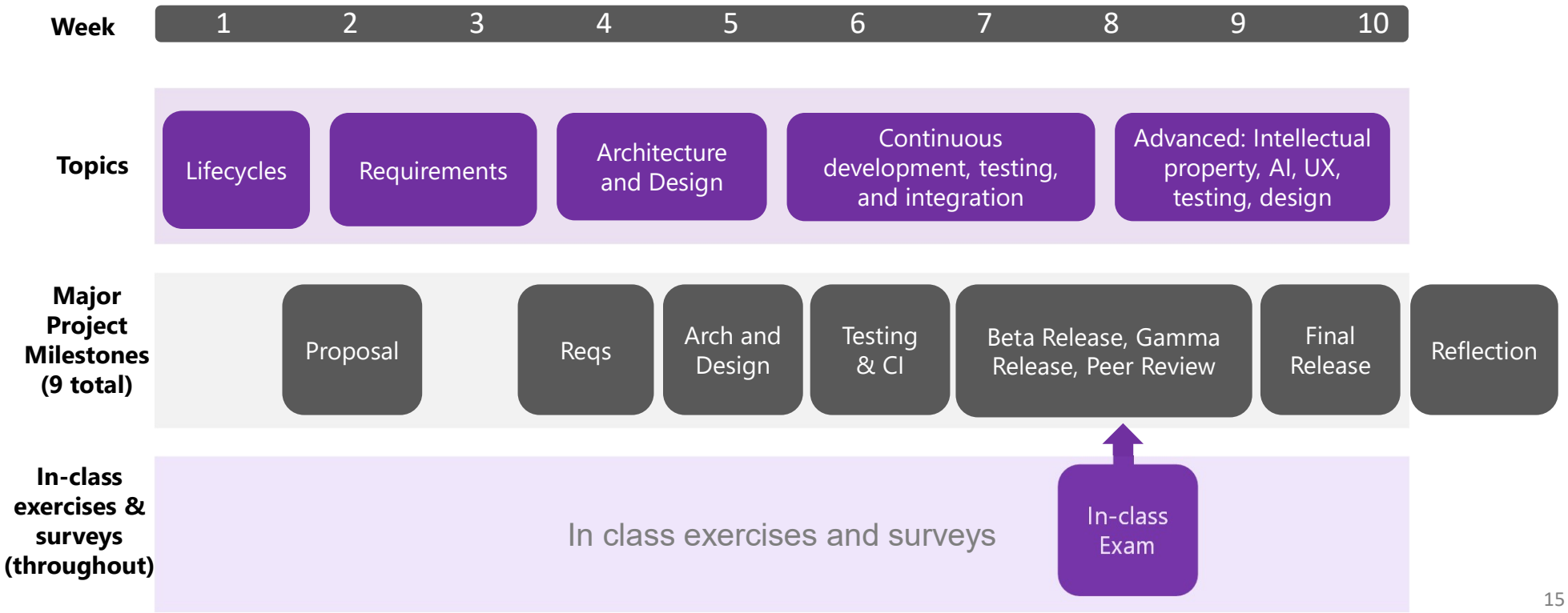
By the end of the quarter, you'll have…

- Been exposed to some of the best software development practices in use today
- Understand how software is produced – from conception to continuous development and release
- Developed skills to effectively collaborate with others towards a common delivery goal
- Experienced the responsibilities, issues and tradeoffs involved in making decisions as software engineers



Course overview: schedule

Important: See Calendar and Canvas for current details of topics and assignments



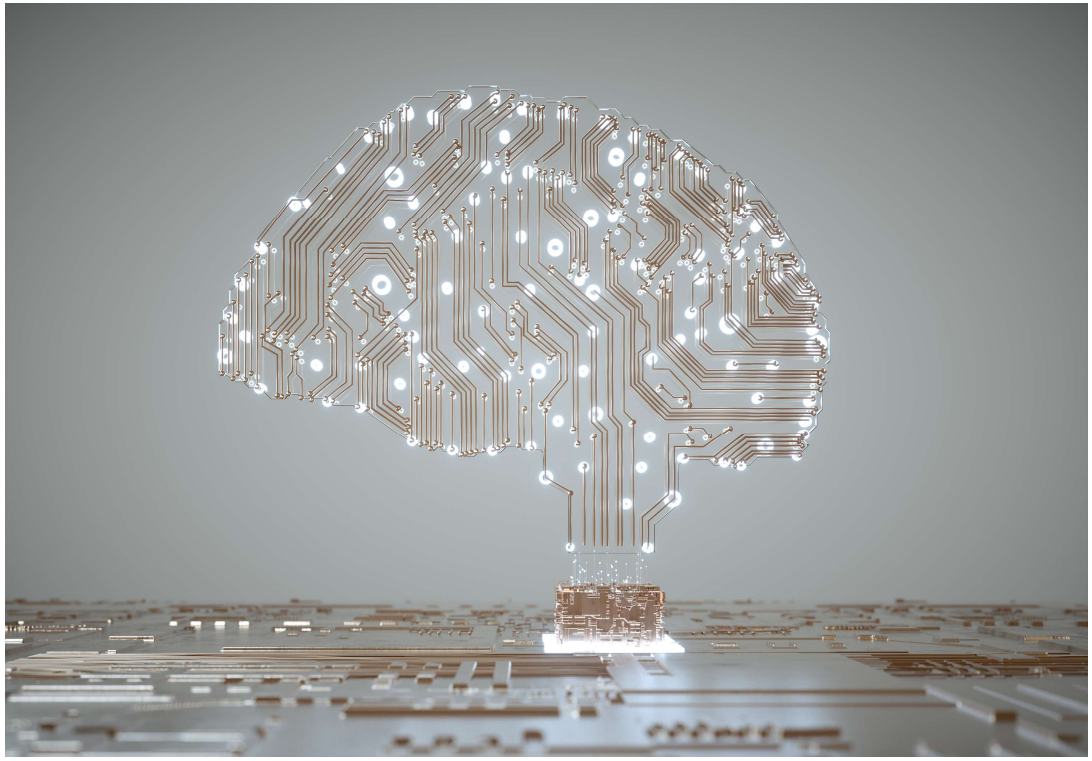
Course overview: grading

- 60% **Project milestones** (small group/2-3, **team**, individual)
  - 10% : Beta release and final release
  - 50% : All others from proposal to reflection
- 15% **In-class exercises** (small group/2)
- 15% **Later-in-term exam** (individual)
- 10% **Participation** (individual)
  - Project team and meeting engagement
  - In-class polls, feedback-requests, Q&A, etc.

Course overview: expectations

- Ability to program (in any programming language)
- Actively participate in discussions (in class, in teams)
- Take initiative and be accountable (to yourself, to your team)
- Commit to responsible teamwork and communication
- Reflect on experiences and continuously improve
- Go beyond adequate

Course overview: use of AI

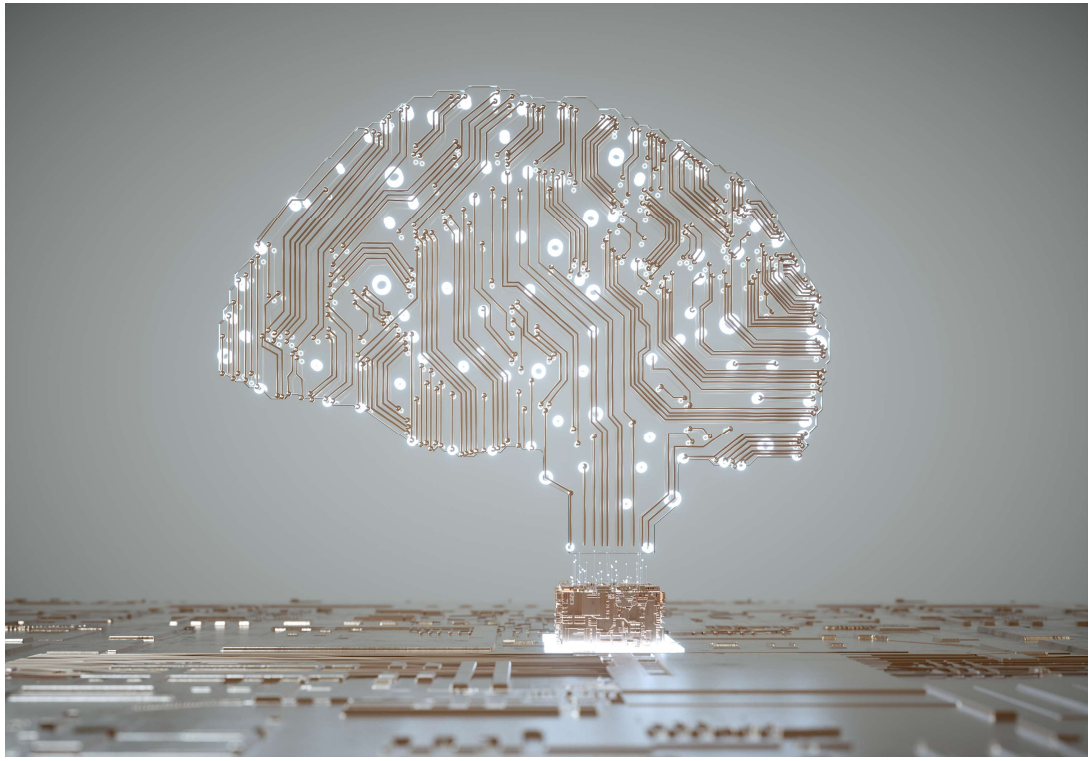


Course overview: use of AI

Two acceptable uses in CSE403:

1. Project code-generation

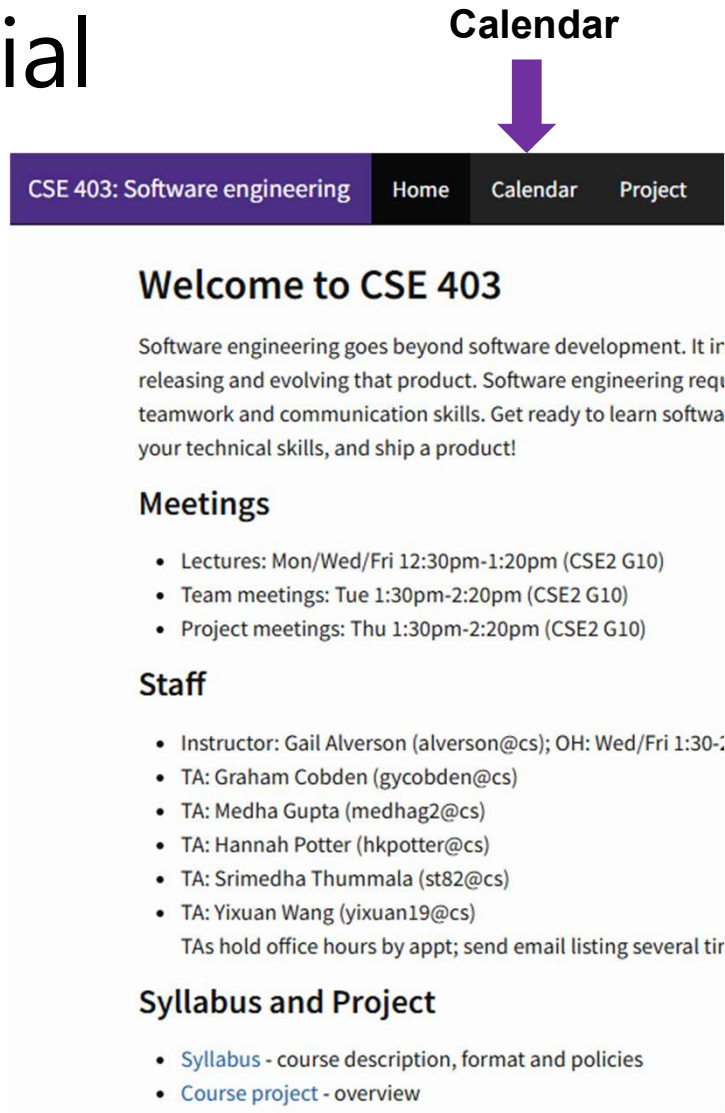
2. AI-assisted features in your project (backend component needed to enable a feature)



See policy section of course Syllabus

Course overview: class material

- Website: https://courses.cs.washington.edu/courses/cse403/25wi
- Class discussions and announcements (Ed): https://edstem.org/us/courses/70255/discussion
- Assignments and turnin (Canvas): https://canvas.uw.edu/courses/1779835
- Direct questions to staff:
  - cse403-staff@cs.washington.edu
  - Email or Ed Chat
- Office hours



The project and assignment 1

What's the difference between a PROJECT and a PRODUCT

The CSE 403 project

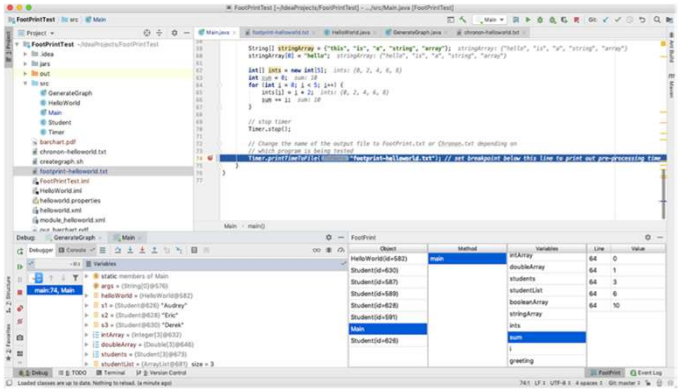
- This week you'll develop a project proposal and pitch it
- A subset will be selected to move forward (think, sharktank)
- You'll be assigned to a project team (you'll have input)
- The rest of the quarter, you'll work to develop the product with your team, with incremental deliveries including demos
- Weekly cadence:
  - Weekly milestone deliverable (due each Tues evening)
  - Tues section for team meeting
  - Wed project update report
  - Thurs section for project meeting with TA

Some example products

- Security browser plug-in to consolidate cookie management
- Plugin using AI to automatically add comments to code
- HowTheyVote tool to identify congress voting history
- Advanced music editor with search and splice capabilities

- App to split roommate costs/payments

- DuoCode (inspired by Duolingo) to learn coding



- Plugin to view history of variables

Common challenges for students

- Creativity in product pitches
  - Encourage moving beyond social-networking product ideas
  - Avoid online gaming given the development process can differ from class milestones
- Teamwork
  - Effective communication and coordination (#1 challenge)
  - Different backgrounds, skills, and incentives
- Complexity
  - Tooling and technology stacks
  - Scale of development team, code base and code integration
- Uncertainty
  - Trade-offs, decisions, and justifications

Assignment 1 – Project proposal

- Prepare a project proposal in teams of 2-3
  - Use today and tomorrow's section to form a group
    Identify your group via class form by Tues 1/6 11:59pm
  - Think about a problem, a pain point, for some target customer set
  - Consider what's already in play and available
  - Describe your solution, its value proposition, and its high-level technical approach
- Turn in your proposal: Monday 1/12
- Present in-class and section: Tues-Thurs 1/13, 1/14, 1/15
- Rank your preferences: Thurs 1/15
- Answer questions from staff: Fri 1/16
- Learn your team and project! Tues 1/20 in section or before

See Calendar and Canvas for links to details

One last but important piece of information

- Classroom emergency preparedness
  - Know your exits
  - Fire situation
  - Shelter in place situation

Questions

Additional material

CSE 403 vs internship

There are many commonalities!

Internship
- Get paid (usually)
- Get experience the real world and with real customers (+/-)

CSE 403
- Get significant input on what is the product you'll deliver
- Get significant input on your role in its development
- Get detailed feedback and support with learnings encouraged

You typically have less control of your path in an internship and lots of control in CSE403 and both are valuable experiences