

Summer/Fall 2021
CS469(80319)/CS470(10842) - Software Engineering Capstone
Dept. of Computer Science/Portland State University
Remote
June 21, 2021 to December 10, 2021
Monday/Wednesday @ 6:00-9:15 (Summer 06/21/21 - 08/29/21)
Monday/Wednesday @ 6:40-9:55 (Fall – 09/27/21 – 12/11/21)

Instructor. Warren Harrison (warren@pdx.edu).

Time and Location. Monday/Wednesday evenings @ 6:00-8:45 (In Fall, the schedule is 6:45-9:15). Once teams are assigned, a weekly meeting between the instructor and the Project Leads as well as in-person team meetings will replace the lectures. *Weekly in-person team meetings will be held on Monday & Wednesday evenings unless other arrangements are approved by the instructor. In general, Monday evenings will be full team meetings and Wednesday evenings will be subgroup meetings.*

Credits: CS469 is 3 credits and CS470 is 3 credits for a total of 6 credits. *P/NP grades are assigned upon the completion of CS470.*

Course Prerequisite. CS300, CS320, CS333, CS350 and a Programming Intensive CS Elective. **Students must have all prerequisites complete, with a C or better, before the first day of class.**

Course Description. The computer science Capstone course is a two-quarter sequence (20 weeks, not including finals weeks and breaks) that emphasizes team development of a substantial project performed for a real customer. Lectures will address the engineering and management of software projects, such as those being carried out by the teams, and group dynamics. It is the intent of the course to provide a capstone experience that integrates the material from the CS curriculum through its application to a realistic project.

Time Expectations. There is an expectation of at least 9-12 hours of productive work per week. Some roles, such as Team Lead may require more time each week, and other roles may find their effort is allocated across peaks and troughs with some weeks accounting for only a few hours and other weeks consuming far more than the minimum of 9 hours. If your skills are below average, you may find yourself putting in additional hours each week to compensate. You will also find yourself frequently meeting with your team and sponsors outside the scheduled class time. Flexibility among all involved will be expected.

E-Mail Policy. All e-mail from the instructor to you will be sent to your **pdx.edu** address. Barring special circumstances, you are expected to check it daily. If you don't want the hassle of logging in each day, you can easily add a forward so

mail to that address gets automatically forwarded to the account where you usually have your e-mail sent. Your pdx.edu e-mail address is actually a google address, and we will be making use of google tools such as Calendar and Google Docs.

Projects. Students will be selected to participate on teams by their Team Leads. During the fourth week of class, project sponsors will visit the class and present their vision of the project they would like to see implemented. While you should arrive to class on time every week, be especially sure to arrive at class on time for these presentations. The following week, your team will make a presentation to the instructor ranking each project and addressing your team's qualifications for the projects, as well as the challenges that will present themselves. Within a few days, projects will be assigned to each team.

Team members should meet every Monday and Wednesday evening, as well other times, as appropriate. Teams are also expected to meet at least monthly with their project sponsor to ensure that they continue to align with the sponsor's vision and have not deviated from the sponsor's expectations. Sponsors should be viewed first as a customer and only secondly as a resource. While sponsors may be willing to help, ultimately, it's the team's product. Correspondingly, these team and customer meetings will replace regular class meetings as the course moves forward.

Project Organization and Process. A major focus of this class involves planning for success. Teams need to develop a plan on what they intend to do, who is going to do it, and how it is going to get done before they start doing it, and then constantly monitor the plan as they work on the project. This will be an important aspect in assessing your team's performance. Teams will present their requirements and project plans to the rest of the class during the scheduled Final Exam period the **first term**. *All team members are expected to be present and participate in the presentations.* Please mark your calendars and plan for this.

Grading Policies. Students will be graded on their work over the two terms as either a Pass or a No Pass (P/NP). The grade of "IP" (In Progress) is assigned to each student at the end of the first term of the sequence. Grades for both terms are assigned at the end of the second term. If, for some reason, you drop the course prior to completing CS 470 or are unable to register for CS470, you will receive an NP for CS 469. It cannot be stressed enough that students are expected to contribute to their project and meet their obligations in a timely manner. Academic and intellectual dishonesty will NOT be tolerated. You should take this class, and your obligation to your team, seriously. Grades are based on Project Outcome; your Deliverables; Teamwork and Participation.

Project Outcome. Your sponsor's satisfaction with your outcome will play an important part of assessing your team's performance. However, the project will be assessed not simply on whether it succeeded or failed, but rather on *why* it

succeeded or failed. A project that fails due to a dysfunctional team or consistent failure to meet milestones will be penalized. A project that succeeds in spite of a dysfunctional team or consistent failure to meet milestones will also be penalized. Much of your success will be tied back to how well you executed your plan. This doesn't mean a plan is cast in stone, but it does mean that you must adjust your plans as things change. Each team will give a presentation, open to the public, of their project at the end of the second term on Wednesday evening, December 2, 2019. *All team members are expected to be present and participate in the presentations.* Please mark your calendars and plan for this.

Deliverables. Each team should maintain an *up-to-date* project web page or tool that includes the current product backlog, the current (and past) sprint backlogs and the schedule. *This should be updated at the end of each sprint.* You will also be expected to provide organized snapshots of the weekly state of your other planning tools (user stories, burn-down charts, backlogs, etc.) at the end of the term. It is probably best to coordinate this with your weekly team meetings. Individuals should also maintain an *organized* weekly activity log that provides a record of the work they did and when they did it. While a Git log can do some of this, it won't document meetings or research, and a simple slack dump isn't organized.

Teamwork. *It is every team member's responsibility to make sure the team works!* Failure to attend project work meetings or to meet agreed upon deliverables is not only destructive to the team, but also irresponsible. Teamwork Credit will mainly be derived from collective peer reviews by your team members.

Participation. Participation Credit will mainly be derived from weekly snapshots and reports made by your Team Lead. Consistent failure to attend and contribute to meetings and meet deliverable obligations will impact Participation Credit. Other evidence of participation may be derived from your commit history and/or specifically attributed artifacts you have contributed to the project.

Class Structure. Initially, the Capstone class will have a structure similar to that of most other classes. Evening meetings will consist of lecture and class interaction. The goal of these lectures will be to help reinforce students' knowledge of commonly accepted software engineering and project management practices. However, by the second term of the Capstone Sequence, the structure of the course will have morphed to something unlike any other course you have taken here. A major goal of the Capstone is to accustom you to a corporate team environment, where responsibility for getting things done belongs to the team and its members.

The Role of the Team Lead. Each team will have a Team Lead that will participate in a weekly Team Lead Status Meeting with the instructor. The Team Lead has been appointed by the instructor, and therefore represents the instructor's authority and responsibility. They are in effect, your manager for the

duration of the project. The Team Lead is responsible for developing the project plan, monitoring it and leading the team to a successful outcome.

360 Reviews. One of the most important aspects of the Capstone is experiencing the evaluation process, both as the evaluator and the evaluated. This is a regular (usually every three months) occurrence in industry. This will also provide you with important feedback from your peers that will allow you to identify your strengths and weaknesses – since one question you will almost certainly get in a job interview is “tell us about your strengths and weaknesses.” It will also give you an opportunity to work on those perceived weaknesses if you want to change.

We do this in Capstone using anonymous 360 Reviews completed by every person (including yourself, so you will also perform self-evaluation) on your team. One such review will occur at the end of the first quarter, and one will occur at the end of the second quarter. The first 360 is intended to be therapeutic and will help you identify your weaknesses in working within a team, and identify things you can improve on. The second 360 is evaluative, and it is factored into your grade for the Capstone.

Access and Inclusion for Students with Disabilities¹. PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. The Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment.

If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the Disability Resource Center to schedule an appointment and initiate a conversation about reasonable accommodations. The DRC is located in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu, <https://www.pdx.edu/drc>.

- If you already have accommodations, please contact me to make sure that I have received a faculty notification letter and discuss your accommodations.
- Please be aware that the accessible tables or chairs in the room should remain available for students who find that standard classroom seating is not useable.
- For information about emergency preparedness, please go to the Fire and Life Safety webpage (<https://www.pdx.edu/environmental-health-safety/fire-and-life-safety>) for information.

Policy on Sexual Harassment, Sexual Violence and/or other forms of prohibited discrimination. As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. Please be aware that as a faculty member, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find a list of those individuals here: <http://tinyurl.com/y73jk8xe> . For more information about Title IX please complete the required student module Creating a Safe Campus in your D2L: <http://tinyurl.com/y7jtsfy4>.

¹ <https://www.pdx.edu/drc/syllabus-statement>

TENTATIVE SCHEDULE FOR Winter/Spring Capstone

Week	Topic	Notes
June 21, 2021	Introduction to the class & Software Engineering	
June 23, 2021	NO CLASS [Team Lead Meeting]	Team Leads Only
June 28, 2021	Team member interviews	Show at your assigned time
June 30, 2021	Team member interviews	Show at your assigned time
July 5, 2021	Independence Day Observed – No class	
July 7, 2021	Team Dynamics, Team Meet & Greet	Team Meeting afterwards
July 12, 2021	Sponsor Presentations	Team Meeting afterwards
July 14, 2021	What to look for in a Project	Team Meeting afterwards
July 19, 2021	Team Meetings to Rank Projects	No class meeting
July 21, 2021	Project Selection Presentations	One team at a time
July 26, 2021	Project Assignments, Effective Meetings	
July 28, 2021	Sponsor Kick-off Meetings	
August 2, 2021	Team Meetings	No class meeting
August 4, 2021	Team Meetings	No class meeting
August 9, 2021	Team Meetings	No class meeting
August 11, 2021	Team Meetings	No class meeting
August 16, 2021	Team Meetings	No class meeting
August 18, 2021	Team Meetings	No class meeting
August 23, 2021	Team Meetings	360 Reviews Distributed
August 25, 2021	Mid-project Presentations Begins at 6:00PM on Zoom	Each member must participate during the presentation.
BREAK		
September 27, 2021	Team Meetings	NOTE: Fall Term meetings begin at 6:40PM
September 29, 2021	Team Meetings	TBD
October 4, 2021	Team Meetings	TBD
October 6, 2021	Team Meetings	TBD
October 11, 2021	Team Meetings	TBD
October 13, 2021	Team Meetings	TBD
October 18, 2021	Team Meetings	TBD
October 20, 2021	Team Meetings	TBD
October 25, 2021	Team Meetings	TBD
October 27, 2021	Team Meetings	TBD
November 1, 2021	Team Meetings	TBD
November 3, 2021	Team Meetings	TBD
November 8, 2021	Team Meetings	TBD
November 10, 2021	Team Meetings	TBD
November 15 to November 19, 2021	Feature Freeze & Delivery; Clean-up	360 Reviews Distributed
November 22, 2021	Project Presentation Dry-Runs	
December 1, 2021	Public Final Presentations on Zoom Begins at 6:40PM	Each member must participate during the presentation.
Week of December 6, 2021	Final Delivery to Sponsor	