

SE490+CS493 Capstone Design Spring 2022

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Overview

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NOTE: Discord:

<https://discord.gg/mPTz5CrEZt>

SE490 COURSE DESCRIPTION

Continuing from SE 390, students undertake a substantial customer-driven group project. Project groups establish and maintain project control processes, delivering a series of iterations on their initial SE 390 prototype. Adaptive methodologies are encouraged and supported.

<https://ucalendar.uwaterloo.ca/2022/COURSE/course-SE.html#SE490>

CS493 COURSE DESCRIPTION

Students work in teams on substantial open-ended computer science problems as part of the CS 493/494 course sequence. Lectures describe project management fundamentals and ethical and legal issues in computing. Students form teams, select projects, define project goals, perform risk assessment, establish a project plan, and develop a prototype. Possible project topics can include development of software systems, analysis of extensions to existing systems across the field, and experimental computer science.

<https://ucalendar.uwaterloo.ca/2022/COURSE/course-CS.html#CS493>

LEARNING OBJECTIVES The capstone project is intended to embody essentially all of the learning objectives of the undergraduate degree. Learning objectives have been identified by the Canadian Engineering Accreditation Board (CEAB), the Canadian Information Processing Society (CIPS), and the UWaterloo Software Engineering Curriculum Committee. These are listed in the *Handbook* §1.

Handbook §1

URLs & Repositories

Course Website	https://ece.uwaterloo.ca/~se_capstone/
Course Notes (Handbook)	https://ece.uwaterloo.ca/~se_capstone/se-capstone-handbook.pdf
Project Metadata	https://git.uwaterloo.ca/secapstone/se2023/common (<i>you need to clone this</i>)
Course Discussion	https://discord.gg/mPTz5CrEZt

Contribute Cover Art!

Calling all artists! Please contribute your artwork for the cover of our class abstract booklet. We have used student artwork on the cover for the last few years.

See past abstract booklets on the course website.

Project Evaluation

Handbook §14

Project evaluation is aligned with the learning objectives and is discussed in *Handbook* §14. A central premise is that the software should perform its intended function properly and in a unified way. Generally speaking, capstone projects should, in all relevant ways:

- exemplify the learning objectives;
- demonstrate the skills expected of a graduate;
- make appropriate trade-offs and judgments; and
- not suffer serious oversights.

MARKS are organized as follows:

Handbook §14

Marks are generally assigned to teams rather than individuals. The *teamwork* grade may involve peer evaluation that produces some individual variation in final grades.

In extreme cases, the contributions of individual students might be assessed individually.

<i>Facet</i>	<i>Weight</i>	<i>Due Date</i>
Weekly Learning Activities	20%	
· bootup	2%	May 6
· effort-based assessment	18%	6 out of 12 weeks
Weekly Project Progress	20%	10 out of 12 weeks
· effort-based assessment		
Teamwork	10%	
· quiz	4%	May 22
· health + process self-assess	2%	June 5
· health + process self-assess	2%	July 10
· reflection	2%	July 26
Peer Feedback	10%	
· activity #1	2%	June 12
· midterm (to two others)	4%	June 19–26
· activity #2	2%	July 26
· final	2%	Aug 5–13 (exam period)
Midterm Demo	10%	June 19–26
Final Demo	30%	Aug 5–13 (exam period)

You may choose to do your final demo before the final exam period.

BOOTUP

May 9

1. git clone <https://git.uwaterloo.ca/secapstone/se2023/common>
se2023common
2. cd se2023common
3. mkdir teams/team-OurTeamName
4. cp team-template/*.* teams/team-OurTeamName/
5. userids.txt — uw userids
6. meta.tex — project name, *etc.*
7. abstract.tex — undecided? Describe your best one. You can change.
8. questionnaire.md — more about the project, not for booklet
9. make a merge request with your files, assigned to mlbrooks@uwaterloo.ca

Weekly Learning Activities

Everyone gets full marks for making an honest effort + follow through.

If you follow through an action, plan, or idea or follow through with it, you continue doing or thinking about it until you have done everything possible.

<https://www.collinsdictionary.com/us/dictionary/english/follow-through>

What we mean here by *follow through* is that you address any points or issues raised by your TA. The point of the learning activities is to stimulate your thoughts and your project and your interaction with your TA. So the learning activity might be the start of a conversation, not the end of one. If there are interesting ideas or perspectives that arise from the activity, then you should follow through and address them.

If there are challenging cases where your work lacks honesty, effort, or follow-through, then your TA can ask the instructor for help in assessing part marks.

Remember that the learning activities are not the project. They complement the project, and help you get more out of the educational experience. Let's consider the project itself next.

Weekly Project Progress

Everyone gets full marks for making an honest effort.

The purpose of these marks is to help keep you on track. For years students have said, at Symposium Day, that they would appreciate if we could find a way to help them stay on track through the summer. Let's discuss some aspects of honesty and effort:

- The normal model for course workload at UW is 10 hours/week.
 - For example, in a regular technical course: 3 hours lecture + 3 hours lab + 1 hour tutorial + 3 hours studying.
 - Other universities, such as McGill and MIT, explicitly rank different courses based on the number of credit-hours per week. So then meeting graduation requirements is not just a question of having enough courses, but also of having enough credit-hours, since different courses are weighted differently. At Waterloo courses are supposed to be more uniformly sized.
 - The usual arrangement for most teams in most weeks is something like this:
 - * 1 hour for a learning activity (e.g., watching an old project video and writing a response)
 - * 1 hour for reading course announcements, notes, etc.
 - * 1 hour for meeting with TA
 - * 1 hour for team sync-up/planning meeting

- * 6 hours for actually working on your project (designing, analyzing, programming, etc)
- Some weeks some teams will have different arrangements. For example, if you want to patch the Rust compiler you might need to learn the Rust language, and so you might devote significant time to learning activities on that. Those learning activities should have some structure and some identifiable output. Perhaps you complete a Rust tutorial.
- SE463 deliverables are not part of SE490, although they are part of your overall project.
 - Many reputable universities would consider it dishonest to submit the same work for credit in two different courses.
 - There are opportunities for other requirements activities that you can do as part of SE490+CS493 that are not SE463 deliverables.
- Natural variation occurs, and if we are honest then we acknowledge it. It's not going to be a uniform effort every week.
- Scrum self-assessment of effort in the past week:
 - above average > 10 hours
 - average ~10 hours
 - below average < 10 hours
- Full marks: make an honest effort over the term.

THERE IS A GRADING PROGRESSION through the capstone courses:

- We start in SE390 grading you purely on effort.
- Now in SE490+CS493 the scale slides towards effort (weekly progress) and technical assessment (final demo).
- For Symposium Day next March the assessment is on technical merits and real world results.

Project Demos: Midterm + Final

The general goal is to have software that users can try by the end of the term, while applying good software engineering practices. Then you can gather user feedback over the fall coop term and revise your project accordingly next winter.

There is some description of this assessment in the Handbook. The best way to calibrate yourselves is by watching old project videos. If you have questions about what to do next in your specific project, then ask your TA or instructor.

For some projects this goal doesn't make sense, and that's ok. Discuss with your TA or instructor.

University Policies

Intellectual Property: UWaterloo has the (fairly unique) policy that intellectual property is owned by its creators (rather than by the university). The university has resources to help you commercialize your project (if desired), as well as local incubators such as Velocity.

<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-73-intellectual-property-rights>
<https://uwaterloo.ca/secretariat-general-counsel/faculty-staff-and-students-entering-relationships-external>

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

<http://uwaterloo.ca/academicintegrity/>

AccessAbility: AccessAbility Services collaborates with all academic departments to arrange appropriate accommodations for students without compromising the academic integrity of the curriculum. If you require academic accommodations, please register with AccessAbility Services at the beginning of each academic term.

<https://uwaterloo.ca/accessability-services/>

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Policy 70, Student Petitions and Grievances, §4, <http://secretariat.uwaterloo.ca/Policies/policy70.htm>

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about rules for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean.

<http://uwaterloo.ca/academicintegrity/>

For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, <http://secretariat.uwaterloo.ca/Policies/policy71.htm>

For typical penalties check Guidelines for the Assessment of Penalties, <http://secretariat.uwaterloo.ca/guidelines/penaltyguidelines.htm>

Appeals: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals).

<http://secretariat.uwaterloo.ca/Policies/policy70.htm>

<http://secretariat.uwaterloo.ca/Policies/policy71.htm>

<http://secretariat.uwaterloo.ca/Policies/policy72.htm>

Reconciliation

We acknowledge that the University of Waterloo is on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes ten kilometres on each side of the Grand River.

<https://uwaterloo.ca/arts/about-arts/territorial-acknowledgement>



Figure 1: Contemporary map of the original Haldimand Tract and the remaining Six Nations Territory (red).

Announcements

Course announcements will be posted in Discord first, then copied here for archival purposes.

May 5

Project Selection Advice

Four good criteria for project selection:

1. There is a defined group of users.
2. You have access to those users.
3. Their needs are at least partially documented by others.
4. Their needs are not currently met by existing solutions.

Weekly TA Meetings

May 9

PURPOSE: To keep you on track. For years students have said at graduation that they wished we had a way to better help them stay on track during SE490. This is just the third year we've had TAs, and so this is what we're trying to address this historical student feedback. Your suggestions for improving the process welcomed.

GENERAL GUIDELINES:

- Everyone should attend.
- Make the meetings as meaningful and as short as possible.
- Cameras on.
- Submit scrumX.md file at least two hours before meeting.
- Assign your TA as a reviewer for scrumX.md in Git.

Ask Patrick for exceptions. Maybe someone is in a very different time zone etc.