

CS5934 Course Syllabus (Fall 2025)

Instructor Information

Dr. Melissa Cameron: melissacameron@vt.edu

Dr. Sara Hooshangi: shoosh@vt.edu

Office Hours

Dr. Melissa Cameron, by appointment, <https://virginiatech.zoom.us/j/85313252927>

Dr. Sara Hooshangi, by appointment, <https://virginiatech.zoom.us/j/84596072770>

Meeting Time and Location

83724 Mondays and Wednesdays 4 PM - 5:15 PM in-person in ICAB.

83723 Mondays and Wednesdays 4 PM - 5:15 PM via zoom

<https://virginiatech.zoom.us/my/melissacameron>

You are expected to attend all class meetings. You are expected to attend in-person if you are registered for CRN-83724 (the in-person section).

You are expected to have your video enabled during class as well as during meetings with instructors or mentors, if on Zoom.

Prerequisites

Completion of at least 18 credits in the MEng-CS program, or the permission of the instructor.

Course Overview

This course provides students with the opportunity to take a project idea from the initial concept phase to product development phase by integrating a hybrid agile software development approach with systematic analysis of end-users, as well as the needs of stakeholders. Students will complete a semester-long group project (~5 students per group). At a high level, students will:

- document system requirements,
- design the system,
- implement code,
- test the functionality of the system,
- deploy the project publicly and
- present their final product to the public.

One of the main objectives of this project is for students to have an opportunity to utilize the knowledge and skills acquired throughout the MEng program to solve real-world problems. The Capstone Project is an opportunity for students to showcase their skills and construct a tangible product that can be presented to future employers.

The overall purpose of this course is to help students develop a comprehensive understanding of the preparation, design and deployment of a software product. This course is the capstone course in the Master of Engineering in Computer Science at Virginia Tech. It is normally taken during a student's final semester at the University. The course requires that students apply many of the topics covered in the other courses in the program in a small group setting. Students will be introduced to the experience of designing a system, are required to complete a system design document, and must develop a prototype system. All aspects of system design and planning are included.

This course involves significant group collaboration as well as independent development. You will be expected to demonstrate excellent professionalism and teamwork, write effective project documents, present your progress and review the work of others.

Knowledge Expectations: This course is a graduate course that gives students a chance to transfer their MEng degree learning into a practical project. As a graduate student in the CS department, you are expected to be already proficient in programming tasks, and knowledgeable about software engineering concepts and software project lifecycle activities. You are also expected to be proficient in oral and written communication in English.

Learning Outcomes

Upon successful completion of this course, students should be able to:

- Generate technology design ideas to address open-ended social, business, or individual needs.
- Identify and analyze user and stakeholder needs and adopt a human-centered design approach.
- Employ processes to move from design concept to a viable product.
- Develop a minimum viable implementation from the product design.
- Work effectively as a member of an interdisciplinary product development team.
- Communicate clearly in both writing and oral presentation to the appropriate audiences.

Course Website

All course information will be available on Canvas or through email. All schedule changes, assignment information and logistical information will be presented on Canvas or through email. All submissions will use Canvas unless otherwise noted by the given assignment.

Course Materials

Primary Texts (required): None

Secondary Readings

Any secondary readings will be identified prior to the appropriate class. They will be available through the VT Library, on the Canvas site or they will be provided to you directly through links.

Technology Requirements

Hardware

Virginia Tech provides [technology requirements and recommendations](#) for computer hardware. Among other things, this includes a computer with a **working camera and microphone**.

Software

- GitHub/GitLab
- An Integrated Development Environment (IDE) or Text editor
- AWS
- Any languages, programs or software your team deems necessary.

You must be able to install the software tools necessary to develop your projects and are expected to have the basic skills necessary to develop and execute your own programs on your computer as well as deploy your project to the public. Working and reliable computer and Internet access is required as well as access to Canvas and Zoom. Occasionally you may use resources from LinkedIn Learning. You are expected to use a configuration management tool such as GitHub, or similar systems to show your project progress to the instructor and use this space to collaborate with your team. You will also be required to use software to create and maintain your software project management as well as notes from group meetings and discussions. You will be required to share these with the instructors

Course Structure

The course is structured in 5 sprints, each 3 weeks long, after a series of preoperatory weeks to create a contract, propose and plan the project. Students are expected to attend each scheduled class, complete any required preparatory work, and participate actively in lectures and discussions.

Expected Hours of Work: Students should expect to spend *a minimum of ten hours per week* involved in the development of their group project. If exceptional circumstances prevent the timely completion of any assignment, students should **contact the instructor in advance** and not after the completion date has passed.

Teamwork: This course is a semester-long group project and as such each member of the group must contribute to the success of the project. Self and peer evaluation surveys will be used to gauge the dynamics of the group. If it is evident from these evaluations that a member of the team is not contributing to the completion of the project, the instructor can assign a grade significantly lower than the group grade to this individual.

Course Schedule: A tentative detailed schedule for the semester is available on the Canvas homepage. **Please note** that the course schedule is subject to change. Changes will be shown on the Canvas site schedule.

Assignments. Information about assignments may be provided early in the semester even though they will not be assigned until later. This information is provided for planning purposes only. No assignment is binding until it is actually assigned. There may be additional assignments given for which information was not provided early in the semester.

Schedule Modification Statement: The schedule is a tentative outline of the course. It generally outlines the topics we plan to cover. The exact topics as well as the order of the topics is subject to change. Dates for assignments, class activities, due dates on the schedule are tentative and subject to change until actually assigned. After an assignment is given, the due date can only be changed to a later date. This may occur based on student mastery and interests, unexpected school closures etc. If there is a conflict between the due date on an assignment and the tentative schedule, the due date on the assignment is the correct date.

Course Assessment

The assessment of the course will be through weekly activities, project proposal and planning, sprint deliverables, presentations, final product submission and presentations. Complete description, due dates, and instruction for completing all assessment will be provided in Canvas. This course uses a percent-based grading schema.

Assignment	Percentage
Class Activities	5%
Project Proposal	5%
Project Management Planning	10%
Sprints (5 * 10%)	50%
Progress Presentation	5%
Final Presentation	10%
Final Project Submission	10%
Teamwork	5%

Grading Scale

This course uses the following grading scale:

93 ≤ A < 100
83 ≤ B < 87
73 ≤ C < 77
0 ≤ F < 65

90 ≤ A- < 93
80 ≤ B- < 83
70 ≤ C- < 73

87 ≤ B+ < 90
77 ≤ C+ < 80
65 ≤ D < 70

Course Evaluations: There may be several opportunities to provide course feedback during the semester including the SPOT survey at the end of course. The information provided will be anonymous. Occasionally extra credit may be offered for participation.

Course Policies

A Learning Community: The key elements to the creation of a learning community are honesty, responsiveness, relevance, respect, openness, and empowerment. These will serve as the guides for our community. Therefore, students participating in this course are asked to be open to all perspectives and empowered to be honest in their responses to all questions, conversations, and discussions in a manner that is respectful and remains relevant to the topics under discussion.

Attendance and Participation: Attendance and active participation are not only expected by the university and the instructional staff, but they are also a mark of professionalism. As such, a lack of attendance and/or participation may negatively impact your grade. Additionally, there may be unannounced graded in-class assignments in any class period. Students are allowed one missed class without penalty.

Honors Code: We will be bound by the Graduate Honor Code. Please visit the Graduate School Honor System's webpage (<https://graduateschool.vt.edu/academics/expectations/graduate-honor-system.html>) for specific information regarding expectations and policies related to the Graduate Honor Code.

Late Assignments:

- All submission should be through Canvas. Submissions sent by email will receive a grade of zero.
- For assignments marked as no late submissions accepted, late assignments may not be accepted for any credit.
- In the event of an unforeseen circumstance where you miss class or a deadline, inform your instructor immediately.
- You have a 48-hour "time bank" for use across the entire semester. You may use these hours at your discretion, to extend due dates up to a maximum of 24 hours per assignment. No approval is required, and there are no penalties for using your hours. Any submission made after the normal due date results in an automatic deduction from your time bank hours. Only whole hours can be withdrawn. For example, if your last submission to a particular project is 1 hour and 10 minutes late, then 2 full hours will be deducted from your time bank. You're responsible for keeping track of your own time bank balance. Once your time bank balance reaches zero, any further late submissions will receive a grade of zero.
- Students are allowed one missed **in-class assignment** (this does not include project deliverables, homeworks or any assignments that are not confined to one class period) to be dropped to allow for unexpected emergencies.

Individual grading of group assignments: Some group assignments may have portions graded individually for each team member. These may rely on author documents, team member evaluations, code reviews etc.

Grading Questions or Re-grading requests. Any questions, concerns, disputes, or requests to review any aspect of how an assignment was graded must be made within 1 calendar week (168 hours) except for assignments returned during the last week of classes or after classes end as these, of necessity, may have shorter deadlines.

Teamwork expectations: All team members are expected to be professional, pleasant to work with, and meet agreed-upon expectations. Should any team issues arise that teams are unable to handle, team members must report the issues promptly (at least by the next Team Member evaluation) to instructional staff.

Professionalism. Unprofessional electronic communication, unprofessional assignment submissions or unprofessional in-person behavior, including a lack of attendance or participation, may result in a 0 or a negative grade adjustment on the appropriate assignment or even a student's overall grade.

Student Concerns: You must inform your instructor as soon as possible of anything that may prevent you from completing coursework and exams as well as any other concerns that you may have.

Student Conduct: Students are expected to be respectful of classmates and teaching staff.

Course Support

Religious Accommodations: Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observation.

Technical: The instructor for this course does not provide technical support. For technical support assistance regarding any problems with Canvas, use the "Help" button of Canvas. For other technical help contact VT's 4Help center by using the Help Request Form or by calling (540) 231-HELP (4357).

Classroom Accessibility: Any student who has been confirmed by the University as having course accommodations must notify the instructor as soon as possible, preferably during the first week of the course. For more information, please visit <http://www.ssd.vt.edu/>.

Academic Support Services: Virginia Tech provides a broad network of support services to help students succeed. Refer to the Graduate School's academic support resources page on the Graduate School's website at <https://graduateschool.vt.edu/>. For complete information on student services at Virginia Tech see: <https://students.vt.edu/>.

Where to find information

Being a professional requires being mindful of others' time, therefore before sending an email or attending office hours, try to find the answer to the question yourself. You can use a number of resources available to you:

- If the question is related to class administration, check the syllabus, schedule and announcements on Canvas.
- If the question is related to recent information, or assignment-related, check Canvas (including announcements) lecture slides as well as previous emails sent to you.
- **Grade-Related Questions:** If you have a question specific to you or your grade, email it to the instructional staff.
- If you have a question that is beyond the scope of an email, consider scheduling an appointment.

SYLLABUS MODIFICATION STATEMENT

This syllabus represents a flexible agreement between the student and instructor. It outlines the policies and procedures of the course. Modifications to the syllabus (except for the schedule) will be limited as much as possible and will only occur when; 1) necessitated by unexpected emergencies (including but not limited to school closures, requirements for distance learning etc), unforeseen negative student behaviors, other unforeseen issues; 2) mutually agreed upon by instructor and students based on things including, but not limited to, course evaluations, student topic interests or students content mastery. Syllabus changes will be communicated to all students through Canvas or email and will not take effect until after communicated.