ELEC 4907/4908, SREE 4907
Final Year Engineering Project

Fall 2025/Winter 2026 Academic Terms

1 Introduction

The Final Year Engineering Design Project is a capstone course that challenges students to integrate and apply the knowledge, skills, and professional attributes developed throughout their engineering degree program. Through a comprehensive, hands-on project, students work in teams to design, develop, and implement innovative solutions to complex engineering problems, aligning their work with real-world constraints and stakeholder needs. This course fosters critical technical and non-technical skills, including problem-solving, teamwork, leadership, communication, and project management, while emphasizing ethical and sustainable engineering practices. Guided by faculty supervisors and evaluated through reports, presentations, and peer assessments, students will demonstrate the Canadian Engineering Accreditation Board's Graduate Attributes, preparing them for professional practice and contributing to the department's continual improvement process. For more details, visit Engineering Canada.

2 Course Description and Requirements

2.1 Course Description

Student teams develop professional-level experience by applying, honing, integrating, and extending previously acquired knowledge in a major design project. Lectures are devoted to discussing project-related issues and student presentations. A project proposal, interim report, oral presentations, and a comprehensive final report are required.

Includes: Experiential learning activity
Prerequisite(s): fourth-year status in Engineering and ECOR 4995 (may be taken concurrently). Certain projects may have additional prerequisites or co-requisites. Students are strongly encouraged to take the 3rd-year design project course for better preparation
Dedicated Hours: Three hours a week

2.2 Instructor(s)

Capstone Co-ordinator: Shulabh Gupta shulabh.gupta@carleton.ca
Project Supervisors

1. **Shulabh Gupta** Metamaterials and Antenna Research Squad (MARS)
2. **Jim Wight** Microwave Engineering Group
3. **Winnie Ye** Micro/NanoPhotonics Laboratory
4. **Masum Hossain** Link
5. **Ravi Prakash** Organic Sensors and Devices Lab (OSDL)
6. **Hima Dhulipati** Sustainable Energy
7. **Xiaoyu Wang** Autonomous Systems

Email: Shulabh.Gupta@carleton.ca
TA: Following teaching Assistants are dedicated for help with course evaluation and lab support:

1. David F. Hardy, davidhardy@cmail.carleton.ca
2. Alexander Zabolotnii, alexzabolotnii@cmail.carleton.ca

Course Webpage: On Brightspace. Click here for General Information

3 Evaluation and Grading Scheme

3.1 Key Deliverables

1. Fall Term 2025:
   - Project Proposal (individual submission): 5%
   - Budget Request (group submission): Pass/Fail
   - Professional Considerations & Practice Report (individual submission): Pass/Fail
   - Fall Progress Report (individual submission): 20%
2. Winter Term 2026
   - Design Review (Oral Format, Group): 15%
   - Project Presentation (Oral Format, Group): 20%
   - Final Technical Report (individual submission): 40%
   - Financial Report (group submission): Pass/Fall (marked by the Capstone Co-Ordinator)

3.2 Course Evaluation

1. Students must receive a Pass grade from their respective project supervisor(s) in the Fall term. This includes receiving a Pass grade in the Professional Considerations & Practice Report (which includes satisfactory project timesheets and satisfactory participation in the group project), along with at least 50% grade in the overall term grade. This is a necessary criterion for continuing the project in the Winter term.
2. Course passing criterion: at least 50% in the Final Technical Reports, 50% or above in the overall term grades and a Pass in the final project financial report.
3. All project deliverables mentioned above are mandatory and must be submitted on the Brightspace course page, with a late penalty of 25% grade per day.
4. Access to the hardware labs and computing resources is conditional upon successful completion of any health and safety training and modules, provided during the course.
5. For ensuring regular participation and progress in the project, each student must complete a timesheet on a regular basis throughout the course of the Capstone project on Brightspace. Failure to submit the timesheets, will lead to an automatic failure in the course, in consultation with the project supervisor.

4 Self-Declaration Form and Deferred Term Work

Students who claim illness, injury or other extraordinary circumstances beyond their control as a reason for missed term work are held responsible for immediately informing the instructor concerned and for submitting a self-declaration form no later than three (3) days after the date/deadline of term work including test/midterm, labs, assignments. Any alternate arrangements made with the instructor for submission of term work should be made as soon as possible but within 3 days of the missed due date. If this is not possible after discussion with the instructor, alternate arrangements must be made before the last day of classes in the term as published in the academic schedule.

Requirement: Contact the Capstone instructor/TAs with the completed self-declaration form no later than 3 days after the date/deadline of term work, including tests/midterms, labs, or assignments.

4.1 Generative Artificial Intelligence (AI)

Students may use AI tools for sharing ideas, clarifying challenging concepts, or getting started on projects. Some acceptable uses include:

1. Students may use AI tools for basic word processing and formatting functions, including grammar and spell checking, basic formatting and design suggestions.
2. Creating outlines (e.g., using AI to structure an essay or presentation flow).

3. Providing definitions or explanations of complex concepts (e.g., using AI to explain a difficult theory).
4. It is required to document your use of AI in this course, using the following guidelines:
    - Clearly identify and cite AI-generated text (e.g., 'The following paragraph was generated by ChatGPT/Microsoft Word's Researcher tool'). Please consult resources on the Library website.
    - Review, edit, and ensure the accuracy and originality of final submissions.
    - AI-generated content should not exceed 30% of the total work deliverable length.

This policy supports the use of AI as a supplementary tool, helping students develop ideas and structure their work while emphasizing the importance of transparency and personal engagement with the content. AI can be used for inspiration and foundational support, and can encourage students to critically assess and refine AI-generated material.

As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

Note: Students can also access resources related to citing Generative AI on the MacOdrum Library website. Additional resources are also available on https://carleton.ca/ai/.

Important: While the AI tools maybe used following these guidelines, the ownership of the work must belong to the students only, and they should be able to describe their work deliverables satisfactorily. In case, it is demonstrated that any submitted work was generated by AI and the student is unable to explain the work, a grade penalty of 50% will be applied.

5 Learning Outcomes

Upon successful completion of this course, students will be achieve the following outcomes:

1. **Apply Engineering Knowledge:** Demonstrate the ability to apply advanced engineering principles, theories, and methodologies specific to the project's discipline to design and develop innovative solutions.
2. **Problem-Solving and Critical Thinking:** Formulate and solve complex engineering problems by identifying requirements, analyzing constraints, and evaluating feasible solutions.
3. **Design and Innovation:** Develop and implement a design process that integrates creativity, functionality, and sustainability to meet project specifications and stakeholder needs.
4. **Teamwork and Collaboration:** Work effectively within a multidisciplinary team, fostering collaboration, mutual respect, and shared responsibility to achieve project goals.
5. **Leadership and Professional Practice:** Exhibit leadership by taking initiative, managing project tasks, and demonstrating professional behavior, including ethical decision-making and accountability.
6. **Effective Communication:** Communicate complex engineering concepts clearly through well-structured written reports, oral presentations, and technical demonstrations to diverse audiences.
7. **Project and Time Management:** Plan, organize, and execute project tasks within defined timelines, effectively managing resources and adapting to unforeseen challenges.
8. **Use of Engineering Tools and Technologies:** Utilize modern engineering tools, software, and technologies proficiently to support design, analysis, and implementation of the project.
9. **Ethical and Societal Considerations:** Evaluate the societal, environmental, and ethical impacts of the project, ensuring alignment with sustainable and responsible engineering practices.
10. **Reflection and Continuous Improvement:** Reflect on the project's alignment with the degree program and personal development, identifying strengths, areas for improvement, and lessons learned for future professional practice.

6 Academic Integrity and Plagiarism

1. Please consult the Faculty of Engineering and Design information page about the Academic Integrity policy and our procedures: `https://carleton.ca/engineering-design/current-students/fed-academic-integrity`. Violations of the Academic Integrity Policy will result in the assignment of a penalty such as reduced grades, the assignment of an F in a course, a suspension or, expulsion.
2. One of the main objectives of the Academic Integrity Policy is to ensure that the work you submit is your own. As a result, it is important to write your own solutions when studying and preparing with other students and to avoid plagiarism in your submissions. The University Academic Integrity Policy defines plagiarism as "presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own." This includes reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source.

Examples of violations of the policy include, but are not limited to:

- Any submission prepared in whole or in part, by someone else;
- Using another's data or research findings without appropriate acknowledgment;
- Submitting a computer program developed in whole or in part by someone else, with or without modifications, as one's own;
- Failing to acknowledge sources of information through the use of proper citations when using another's work and/or failing to use quotations marks; and
- Unless explicitly permitted by the instructor in a specific course, the use of generative AI and similar tools to produce assessed content (such as text, code, equations, images, summaries, videos, etc.).

7 Academic Accommodations

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

1. **Pregnancy obligation:** Contact us with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For accommodation regarding a formally-scheduled final exam, you must complete the Pregnancy Accommodation Form here.
2. **Religious obligation:** Contact us with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details click here.
3. **Academic Accommodations for Students with Disabilities:** The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send us your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, contact us, if needed, to ensure that accommodation arrangements are made.

   You should request your academic accommodations in the Ventus Student Portal, for each course at the beginning of every term. For in-term tests or midterms, please request accommodations at least two (2) weeks before the first test or midterm. Please consult the PMC website for the deadline to request accommodations for formally-scheduled exams (if applicable).
4. **Survivors of Sexual Violence:** As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain

information about sexual violence and/or support, visit here.

5. **Accommodation for Student Activities:** Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation will be provided to students who compete or perform at the national or international level. Contact us with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. See here.