

**ACADEMIC YEAR & TERM:** Fall 2024 – Winter 2025  
**COURSE TITLE:** Final Year Capstone Project  
**DEPARTMENT/SCHOOL:** Electronics, Faculty of Engineering & Design  
**COURSE NUMBER AND SECTION:** ELEC 4907 – Engineering Project, ELEC 4908 – Engineering Physics Project, SREE 4907 – Energy Engineering Project



**Project Co-ordinator:** Shulabh Gupta, [Shulabh.gupta@carleton.ca](mailto:Shulabh.gupta@carleton.ca)

**Web:** <https://carleton.ca/doe-4th-projects/>

## COURSE DESCRIPTION AND REQUIREMENTS

### 1) Course description

The projects in the Electronics Department typically involve design/development of microelectronic, RF/microwave, power and photonic components/systems, and/or development of CAD tools for modeling and design of these components/systems.

Through the projects, students are encouraged to develop professional skills necessary for real-world engineering practices dealing with issues such as health/safety, reliability, codes and standards, and environmental considerations. The projects should be treated not only as an academic activity, but also as a rehearsal for developing products in a real-world industrial/business environment. Students develop a strong sense of responsibility for team success, self-discipline, making timely deliverables, as well as having sound product economics and project management. A project proposal, interim report, oral presentations, and a comprehensive final report are required.

### 2) Prerequisites (and recommended knowledge)

- 4th year status which is 1st, 2nd, and 3.5cr from 3rd year.
- ECOR-4995 is required but may also be taken concurrently.
- Certain Projects may have additional prerequisites or co-requisites as suggested by the supervisor.
- Students are strongly encouraged to take the 3rd-year design project course for better preparation

### 3) Evaluation and Marking Scheme:

- **Fall 2024 (Marked by Project Supervisor Only):**
  - Project Proposal and Budget Request: 5%
    - Project Proposal (individual submission): 5%
    - Budget Request (group submission): SAT/UNSAT
  - Professional Considerations & Practice Report: Pass/Fail
  - Fall Progress Report: 20%
- **Winter 2025 (Marked by Supervisor, Project Readers and DoE Faculty Members)**
  - Design Review (Oral Format): 15%
  - Project Presentation (Oral Format): 20%
  - Technical Report: 40%
  - Financial Report (group submission): Pass/Fail (marked by the Capstone Co-Ordinator)

### 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) Learning outcomes / Graduate Attributes**

The 4th-year project covers a wide range of different learning outcomes. Technical learning outcomes will depend on the specifics of each project. We require students to reflect and to comment on how the project relates to their degree program (in both the proposal and the final report). Non-technical learning outcomes cover a wide range of essential skills that are captured by the Graduate Attributes listed below, including professional practice and behavior, teamwork and leadership skills, presentation skill, time management skills, and others. The degree to which students have achieved these learning outcomes will be measured by the project supervisor through a range of different evaluation approaches, including but not limited to: the quality of written reports, observations during regular meetings, peer evaluations, demos and presentations, etc.

The Canadian Engineering Accreditation Board requires graduates of engineering programs to possess 12 attributes at the time of graduation. Activities related to the learning outcomes listed above are measured throughout the course and are part of the department's continual improvement process. Graduate attribute measurements will not be taken into consideration in determining a student's grade in the course. For more information, please visit: <https://engineerscanada.ca/>.

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### **ADVISING AND COUNSELLING SERVICES**

#### **a) Engineering Academic Advising**

The Engineering Academic Support Service : <https://carleton.ca/engineering-design/current-students/undergrad-academic-support/> assists undergraduate engineering students with course selection, registration, and learning support from first-year through to graduation.

Academic Advisors Contact : <https://carleton.ca/engineering-design/current-students/undergrad-academic-support/undergraduate-advisors/>

#### **b) Student Mental Health Service**

As a University student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. Carleton's Wellness Services Navigator <https://wellness.carleton.ca/navigator/> is designed to help students connect with mental health and wellness resources. If you need to talk to someone, please reach out for assistance: <https://carleton.ca/health/emergencies-and-crisis/>.

### **LEARNING AND WORKING ENVIRONMENT**

The University and all members of the University community share responsibility for ensuring that the University's educational, work and living environments are free from discrimination and harassment. Should you have concerns about harassment or discrimination relating to your age, ancestry, citizenship, colour, creed (religion), disability, ethnic origin, family status, gender expression, gender identity, marital status, place of origin, race, sex (including pregnancy), or sexual orientation, please contact the Department of Equity and Inclusive Communities at [equity@carleton.ca](mailto:equity@carleton.ca)

We will strive to create an environment of mutual respect for all through equity, diversity, and inclusion within this course. The space which we work in will be safe for everyone. Please be considerate of everyone's personal beliefs, choices, and opinions.

### **ACADEMIC INTEGRITY AND PLAGIARISM**

- a) 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.

b) 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 acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
- failing to acknowledge sources of information through the use of proper citations when using another’s work and/or failing to use quotations marks.

## **ACADEMIC ACCOMMODATIONS**

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

**Pregnancy obligation:** write to me 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 ([click here](#)).

**Religious obligation:** write to me 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](#).

**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](mailto:pmc@carleton.ca) for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me 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, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

**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: <https://carleton.ca/equity/sexual-assault-support-services>

**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. Write to me 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. <https://carleton.ca/senate/wp-content/uploads/2016/05/2016-17-Senate-Report-Appendix-1-Accommodation-for-Student-Activities-1.pdf>