SYSC 4907: 4th Year Project

2025 Fall Term Info Session

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The 4th Year Project

- An example of good engineering analysis and design that demonstrates your engineering skills
  - Apply lessons learned from courses
- At least 200 hours … average of 8 hours per week
- Work under the supervision of a faculty member ….
  - Meetings, milestones, applying engineering processes
- But, the initiative for keeping your project on schedule must come from you
- Good Engineering also requires communication & documentation

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The 4th Year Project (cont.)

- It is NOT a requirement that you build something that is
    - "innovative"
    - "unique"
- It IS important that you follow a proper engineering approach, applying, honing, integrating and extending previously acquired knowledge and skills in a major engineering design project.
    - There needs to be a clear relationship between your degree program and the project
        - You are to use your previously acquired knowledge and skills
        - This is NOT the place to learn a brand-new set of skills
    - The process you follow needs to be documented and will form a major part of your evaluation

Information and Resources

- All information about the project is on the web.
  - https://sysc4907.sce.carleton.ca
  - Links : Notices, FAQ, Forms and Deadlines
  - Read the website before asking questions.
  - Note: No longer need Carleton VPN
- Occasional emails will be sent to your cmail account, the one you used for registration on the project website.
- Announcements will be made on BrightSpace.

Getting Started: Group Numbers

- All communications with the coordinator must be done using **your cmail email account**.
    - AND by sending email to ug-projects@sce.carleton.ca, not the project coordinator's individual email account
- Please include your group identifier assigned when you joined a project and Project supervisor, in all correspondence.

Supervisor versus Coordinator

- Coordinator
    - Looks after overall administration of the projects
    - Organizes departmental-wide events
    - Has no involvement in the project itself (not a co-supervisor)

- Supervisor
    - Responsible for regular supervision of progress
    - Responsible for informing student of all project requirements
    - Governs the format of the project deliverables, within the guidelines stated for the project
    - **Responsible for providing any resource required by project**
    - Responsible for evaluating student and the project deliverables

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Project Resources

- Computer accounts are the same SCE-accounts used in your other Systems courses.
    - You may have to re-activate it.
    - Tied to your Connect account.

- Special requests regarding your account must be made by your **supervisor** to Tech Service
    - Extra memory, group or administrator rights
    - Create a ticket: service@sce.carleton.ca
    - Learn a valuable lesson early: Treat your support staff well!

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Project Resources

- You may need to/want to buy specific equipment for your project – who pays?
  - Option 1: Instead of having students purchase equipment, purchasing will be done by our technicians upon request by students and will approval from their supervisor. More specific instructions are on the Capstone website (Resources>>Project Budget Guidelines).
    - Each group has a $500 budget.
  - Option 2: your supervisor (from their research funding)
  - Option 3: Carleton Student Engineering Society, Contact VP Finance: finance@cses.carleton.ca

Project Deliverables

- Project Proposal
- Progress Report
- Oral Presentation
- Poster Fair
- Final Report (See below)
- Project-Specific Deliverables (other items that the supervisor has required)

For expectations and formats of deliverables :
- **General** guidelines and suggestions are posted on the project website called "Project Deliverables"
- Your **supervisor** has the final say. They are marking it.

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Deadlines: The Year in Brief

- Fall Term
    - ~~September 16: Project Selection and Registration on Carleton Central~~
    - October 17**: Proposal** (Submit on-line and to the supervisor)
        - More later on proposal content
    - By December 5, 2025:
        - **Progress Report** (Submit online and to the supervisor)

- Winter Term
    - January 19-23, 2026: Oral Presentations
        - Online or in-person to be determined by supervisor and second reader
    - March 20, 2026: Final Report <u>Draft </u>(Submit to Supervisor)
    - March 27, 2026: Poster Fair
    - **Friday April 8th , 2026:** Final Report and Video (Submit on-line and to Supervisor.)
        - **Missed deadline means F.**

Project Grading

- Two facets of Performance:
  - Technical achievements
  - Professional conduct

- Different procedure from other courses
  - No course breakdown is given; grade is an amalgam of your year's performance.
  - Grading is determined by:
    - Supervisor: Biased "insider"
    - Second Reader: Objective "outsider"; largely technical evaluation

- Governed by published departmental Grade Expectations

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Faculty Grading Guidelines: Project

Quality of Engineering Project	D	C	B	A
Engineering Techniques Used				
Design (the application of engineering sciences)				
Implementation				
Testing				
Analysis				

Individual Performance Assessment	D	C	B	A
Initiative				
Organization				
Conduct of Work				
Learning Experience				
Teamwork				

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Grade Expectations

A: Outstanding achievement

B: Good, solid professional engineering work.
   B+ Expected "typical" grade for a successful project.

C: Below-average performance
   C- minimal acceptable grade average for graduation.

D: Performance is below graduation standards
   D- simply a passing mark for the course credit.

F: is given to those must repeat the course.

Getting Down to Work

- How much work is expected from me?
  - Rough rule of thumb: **minimum 8 hours per week**.

- How can I earn a good mark on the project?
  - Project *must* contain all engineering elements: requirements analysis, design, implementation, testing and documentation.
  - Project *must* reflect the methodologies taught in courses.
  - The best projects are marked by creativity and initiative.

- Bottom Line: The project is your responsibility.
  - Supervisors can only remind/criticize you.

Getting Down to Work

- How often should/can I meet with my supervisor?
- When should I start meeting with my supervisor?
  - ASAP once the term starts
- What do I do in our meeting?
- I've got 3 midterms, 5 labs. I can't work on my project.

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Getting Down to Work

- I can't get hold of my supervisor.
    - Come talk to me.

- My partner is stupid/lazy …
    - We don't use this language!
    - This is part of the team experience.
    - Understand where your teammate is coming from and confirm that the problem is with the partner (and not you…)
    - Try to resolve it within the group first
    - Talk with your supervisor but in a professional manner.
        - Wait until you have calmed down.
        - Prepare concrete examples.
        - Prepare constructive solutions (re-allocate duties, devise a plan for you to continue despite missing your partner's piece)
        - Show leadership by communicating, compromising.

Deliverables: Group Projects

- For all deliverables, there is a choice between individual and group reports
  - Each individual may write their own OR
  - A common group portion is prepared and shared by all members, followed by individual contributions.
- It is the **supervisor's** decision with the following stipulations:
  - **Each individual must contribute an equal portion**.
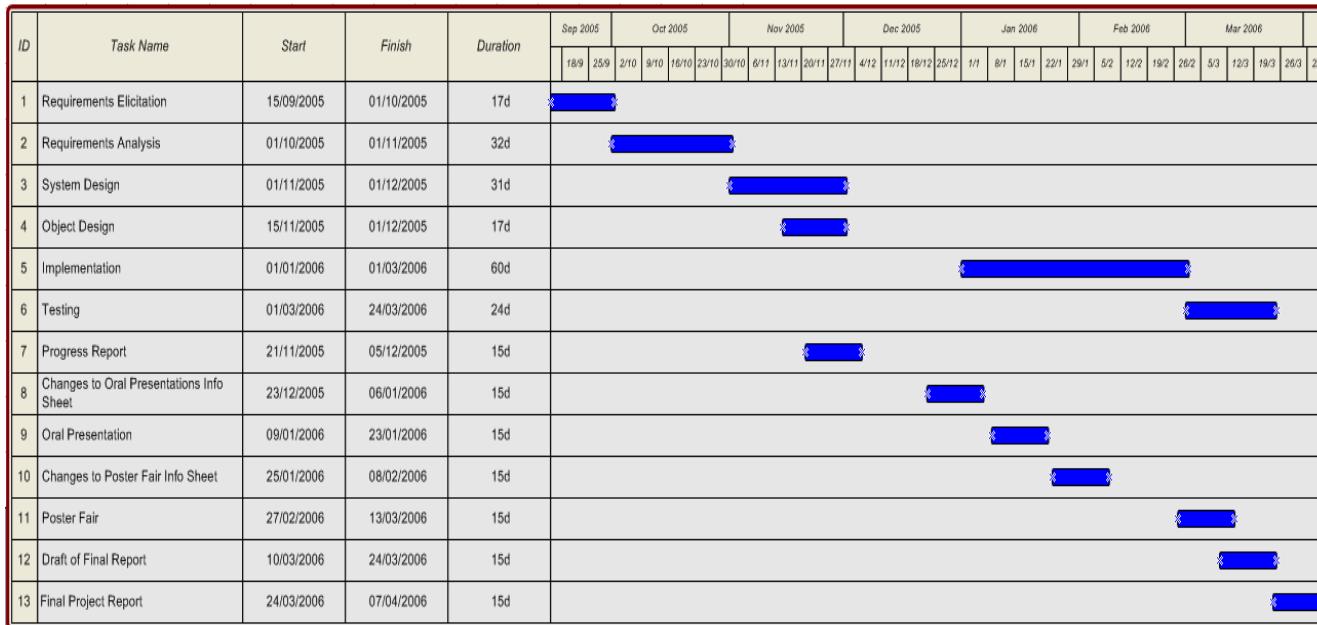 - **The author of each portion must be <u>clearly evident.</u>**

Deliverables: Project Proposal

- Purpose:
  - To convey the objectives and the engineering challenges of the proposed project
  - To present a well-developed and justified plan for the work overall and to be done by each member
- New since 2020/21:
  - Deadline: your supervisors may require an earlier draft at the end of September
  - **Requires significant effort**
  - Will become part of the final report

Required Proposal Components

- The title of the project, your names and student numbers, and your supervisor's name.

- A clear statement of the objectives of the project.
    - Measurable functional and non-functional requirements
    - How to measure progress towards these objectives.

- A brief background of the project: what has been done to address the problem, what the state of the art is, etc.

- A brief description of what you are going to do.

- A discussion of how the project relates to the degree program of each student.

- How does the group, collectively, have the skills required to undertake the project.

- A description of the method(s) you are going to use in solving the problem and how they relate to knowledge you acquired in your degree program to-date.

- A proposed timetable for completion of the project

- A discussion of possible project risks and mitigation strategies.

- A list of special components and facilities that you require.

- A list of reference works, cited in the text

Proposal: Sample Schedule

ID	Task Name	Start	Finish	Duration
1	Requirements Elicitation	15/09/2005	01/10/2005	17d
2	Requirements Analysis	01/10/2005	01/11/2005	32d
3	System Design	01/11/2005	01/12/2005	31d
4	Object Design	15/11/2005	01/12/2005	17d
5	Implementation	01/01/2006	01/03/2006	60d
6	Testing	01/03/2006	24/03/2006	24d
7	Progress Report	21/11/2005	05/12/2005	15d
8	Changes to Oral Presentations Info Sheet	23/12/2005	06/01/2006	15d
9	Oral Presentation	09/01/2006	23/01/2006	15d
10	Changes to Poster Fair Info Sheet	25/01/2006	08/02/2006	15d
11	Poster Fair	27/02/2006	13/03/2006	15d
12	Draft of Final Report	10/03/2006	24/03/2006	15d
13	Final Project Report	24/03/2006	07/04/2006	15d

Deliverables: Progress Report

- **We will share the progress report with 2nd reader**

- Purpose: A mid-point checkup on the progress achieved, with reference to the original proposal.

- Other purpose: An exercise in writing
  - Can also be used as initial step in oral presentation
  - Idea: Present a draft of your background and design

- Typical format: depends on amount of work done to-date and the development methodology you follow.
  - Waterfall Model: background and design chapters should be done (project is half-over)!
  - Agile Development: some non-trivial product with a few key features

Progress Report Structure (cont.)

- Must make reference to your proposal

- Show clearly how much progress has been made

- Make a prediction as to how the rest of the project is likely to develop
  - Refine your schedule for the final term

- State any variation from the project proposal that now seems necessary.
  - A chance to re-define your project, now that you know more

Deliverables: Oral Presentation

- Schedule a time per group member (e.g., 20 minutes) to allow to incorporate demo
  - Live demo
  - Recording of project "at work"
- Scheduling will be done by project supervisor
- Presentations will happen in-person or online as determined by supervisor and 2nd reader

Deliverables: Final Report

- Statement of Objectives
- General Organization (title page, sequence of chapters, references, appendices, etc.)
- Technical Writing and Illustrations (correct English, spelling, clarity, conciseness, accurate and complete)
- Adequate Background Information (preparatory information, literature survey)
- Conclusions and recommendations
- Quality of Final Engineering Product
- Engineering Techniques Used (use of modern concepts and methods, systematic engineering methods)
- Engineering Design (quality of design, functional, adaptable)
- Implementation
- Testing/Experimental Data Used (completeness and accuracy)
- Engineering Analysis (Analysis of the problem & deriving requirements, analysis of data presented, critical review of final product)
- Overall: demonstrated skill in pursuing a proper engineering process

Cautionary Notes

- Plagiarism
    - Review your Professional Practice notes
    - If in any doubt, consult your supervisor before submitting any work (documents or code) that includes references.
- Health and Safety
    - This project will not cause RSI.
    - Projects involving human subjects require approval!

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Next Meeting

- TBD, but expect it to be early-to-mid January
    - An email reminder will be sent

- Agenda
    - Oral Presentations
    - Poster Fair
    - Video and Final Report

Some Suggestions

- September is a (relatively) light month
  - No midterms (or only a few)
  - Labs just starting up.
  - You have lots of energy.

- Use this time to do a **sincere background study** so that when you write your proposal, you have a firm handle on the project
  - You have started to take ownership.
  - Let it be more than a simple restatement of your supervisor's own words.
  - May require some initial prototyping/mock designs/….

- Also, you may want to check out other projects to see if there are similarities.

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