



Carleton
UNIVERSITY

Department of
**Systems and
Computer Engineering**

SYSC 4806 Software Engineering Lab

Calendar description

Applying the full spectrum of engineering and programming knowledge acquired in the program through team projects in the laboratory. Practice in doing presentations and reviews. Lectures will discuss software engineering issues as they relate to the projects, from a mature point of view.

Includes: Experiential Learning Activity.

Lectures two hours a week, laboratory four hours a week.

<http://calendar.carleton.ca/undergrad/courses/SYSC/>

Prerequisites

SYSC 4120, and enrolment in Software Engineering.

Prior knowledge

Students should:

- Be fluent in object-oriented programming and design (SYSC2004, SYSC3110), and have a rudimentary understanding of database systems.

Course objectives

The course develops professional level expertise in selected, important areas of the field by applying, honing, integrating and extending previously acquired knowledge, in team projects in the laboratory. Specifically, this term the course will focus on agile methodologies for the development and operation of web applications. The course objectives are:

- To develop team working skills that are much needed in the software industry. Team work has been recognized as an important aspect of today's engineering education and is, as such, explicitly specified in the accreditation requirements for our program.
- To develop the students' communication skills through presentations on theme topics.
- To gain experience with a Web Application Framework widely used in industry.
- To gain experience with Agile engineering practices to efficiently deploy web applications to remote servers or modern cloud infrastructures.

List of topics

- Anatomy of a Web App, Object-relation Mapping
- Dependency Injection
- Spring MVC
- Continuous Delivery
- The Client Side
- Non-function requirements and Aspect-oriented Programming
- DevOps
- Web Security
- The 12 Factor App

Learning outcomes

By the end of this course, students should be able to:

- Write programs using complex frameworks.
- Apply the agile methodology to developing medium-sized software in a team.
- Translate user requirements into object-oriented domain model.
- Design a database schema using object-relational mapping patterns.
- Implement server-side model-view-controller design.
- Work in a team.
- Give an oral presentation.
- Make sense of technical documentation.

Graduate Attributes (GAs)

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/>.

Graduate Attribute	Learning outcome(s)
1.4.S: Knowledge Base: Applied: Programming and algorithms	1
1.8.S: Knowledge Base: Applied: Software engineering	2
2.2: Problem Analysis: Applied: Approach to the problem	3
4.4: Design: Applied: Design solution(s)	4
4.5: Design: Applied: Design implementation / task(s) definition	5
6.2: Individual and Team Work: Applied: Group culture, group dynamics	6
7.3: Communication Skills: Applied: Oral and written presentations	7
7.4: Communication Skills: Applied: Technical reading	8

Accreditation Units (AUs)

For more information about Accreditation Units, please visit: <https://engineerscanada.ca/>.

The course has a total of 50 AUs, divided into:

- Engineering Design: 100%

Instructor and TA contact

Specific to course offering (tbd)

Textbook (or other resources)

Specific to course offering (tbd)

Evaluation and grading scheme

Specific to course offering (tbd)

Breakdown of course requirements

Specific to course offering (tbd)

Tentative week-by-week breakdown

Specific to course offering (tbd)

General regulations

Specific to course offering (tbd)