Professor: Samuel A. Ajila, PhD, P.Eng., SMIEEE, SMACM
Office: MC 7038
Office Hour: Tuesday 10:00 to 11:00 am

TA Information and Office hours: TBD and TBA on cuLearn

Lecture: Tuesday and Thursday – 1:05 pm to 2:25
Classroom: AT 302

Course Web page: A cuLearn page will be maintained for the course

Calendar Description
Introduction to software project management and economics; Return on software investments; Software life cycle; Work breakdown structure, scheduling and planning; Risk analysis and management; Product size and cost estimation; Earn value management; Statistical process control; Managing project team and process improvement; Bidding and contract types.

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

Lectures three hours a week

Prerequisite(s): SYSC 3120 (may be taken concurrently) or COMP 3004, and enrolment in Software Engineering or the Bachelor of Computer Science.

Students who have not satisfied the prerequisite for this course must either (a) withdraw from the course, (b) submit a prerequisite waiver through to the associate deans’ office (FED or Faculty of Science) or (c) will be deregistered from the course after the last day to register for courses in winter term.

Assumed Knowledge
It is assumed that students registered in this course do have background in:
- The art of software development including problem solving and programming.
- Software requirements engineering or a concurrent registration in a similar course.
- Basic knowledge in calculus, statistics, and probability theory.
- A working knowledge of an OO programming language.

Course Objectives
The objective of this course is to examine the theory, processes, methods, and tools for software project management. The perspective emphasized is that of a Software Engineer in the role of a project manager (or project lead) responsible for planning and controlling the activities that result in the delivery of software products. What are learned from this course are topics that are fundamental for building capacity and knowledge in the management of large, complex, and changing software systems and its environments.

Learning Outcomes
The intended learning outcomes are:
1. Ability to discuss the specific problems of software product management and the reasons for failure, and the need for different approaches;
2. Able to apply basic techniques of cost estimation, risk analysis, and project planning techniques for software development projects;
3. Familiarity with the principles and practice of quality management for software projects;
4. Awareness of the problems associated with managing human resources in software projects; and
5. Familiarity with the management implications of using different software processes and the need for software process improvement.

Graduate Attributes (GA’s)
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/](https://engineerscanada.ca/).

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<tr>
<th>Graduate Attribute</th>
<th>Learning Outcome (s)</th>
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<tbody>
<tr>
<td>3.5 → Interpretation of data (synthesis) and discussion</td>
<td>2</td>
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<tr>
<td>9.2 → Sustainable design; life-cycle planning</td>
<td>1, 2</td>
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<td>10.2 → Professional, accountable, and ethical conduct</td>
<td>4, 5</td>
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<tr>
<td>11.2 → Engineering economics</td>
<td>2, 3</td>
</tr>
<tr>
<td>11.4 → Risk and change management</td>
<td>2</td>
</tr>
<tr>
<td>11.5 → Project definition and management techniques</td>
<td>5</td>
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Data obtained from students’ reading and writing will be used to measure students’ progress towards indicators 9.2, 10.2, and 11.5. Course case studies data will be used to map 3.5 and 11.2. Different sections of the course term quiz and final exam will be used in part for 11.2 and fully for 11.4.

Textbooks

Grading Scheme
A maximum of 100 marks will be available. The division is as follows:

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<th>Percentage</th>
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<tr>
<td>Reading and writing based on the 2nd recommended book</td>
<td>10%</td>
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<tr>
<td>Three case studies – 5% each</td>
<td>15%</td>
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<tr>
<td>30 minutes term quiz - To be held in class on February 13, 2020</td>
<td>15%</td>
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<tr>
<td>Two hours closed book final exam – To be scheduled by the University</td>
<td>60%</td>
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Note: To pass this course a student MUST pass the final exam i.e. obtain a minimum of 50% in the final exam.
1. Note that late hand-in of case studies and writing assignment will be accepted with the penalty as follows: a 20% penalty per day with a maximum of two late days after which the grade of 0 is assigned. The penalty starts 5 minutes after due time on the due date and the 2nd penalty 24 hours after that 5 minutes pass the due time. The assignment is graded zero (0) 48 hours after due time.

2. There is no deferred case study, writing assignments, and term quiz.

3. Note that the Professor reserved the right to set the term quiz and final exam (and deferred exam if necessary) to cover all the materials (i.e. lecture notes, books, handouts, teaching, and reference materials) examined and covered in class and during project.

4. Note also that all inquiries relating to the final exam will be answered in class (at least 1 week before the exam) and the professor will not discuss or provide responses to these inquiries over the phone or E-mail.

5. Final Exam: The final examination is for evaluation purposes only and will not be returned to students. You will be able to make arrangements with the instructor or with the department office to see your marked final examination after the final grades have been made available.

6. Students who miss the final exam may be granted permission to write a deferred examination. Section 4.3.1 of the Academic Regulations of the University applies in case of deferred final exam.

Tentative Outlines – the outlines are likely to evolve during the term

Weeks 1, 2, and 3
   Introduction to Project Management
   Software Life Cycle
   WBS, Software Planning and Scheduling

Weeks 4, 5, and 6
   Risk Analysis and Management
   Software Project Organization
   Software Size Estimation and Reuse

Weeks 7, 8, and 9
   Software Effort Estimation
   Software Cost Estimation and Contract Rates
   Software Cost Control and Contract Types

Weeks 10 and 11
   Software Process Metrics
   Software Project Teams, Communication, and Intellectual Property

Week 12 and 13
   Discussions, readings, and writings
Get help early if you are having difficulty with the course content.

Ways to get help are:
- Ask question in class or during the lab. This is the best way to clear things up.
- Ask professor during office hours.
- Note that Email is not the best medium for technical questions! Questions submitted by Email will be answered at the beginning of the next class.

General Regulations

Attendance: Students are expected to attend all lectures and lab periods. The University requires students to have a conflict-free timetable. For more information, see the current Undergraduate Calendar, Academic Regulations of the University, Section 2.1.3, Course Selection and Registration and Section 2.1.7, Deregistration.

Health and Safety: Every student should have a copy of our Health and Safety Manual. A PDF copy of this manual is available online: http://sce.carleton.ca/courses/health-and-safety.pdf

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 making alternate arrangements with the instructor and in all cases this must occur no later than three (3.0) working days after the term work was due. The alternate arrangement must be made before the last day of classes in the term as published in the academic schedule. For more information, see the current Undergraduate Calendar, Academic Regulations of the University, Section 4.4, Deferred Term Work.

Appeal of Grades: The processes for dealing with questions or concerns regarding grades assigned during the term and final grades is described in the Undergraduate Calendar, Academic Regulations of the University, Section 3.3.4, Informal Appeal of Grade and Section 3.3.5 Formal Appeal of Grade.

Academic Integrity: Students should be aware of their obligations with regards to academic integrity. Please review the information about academic integrity at: https://carleton.ca/registrar/academic-integrity/. This site also contains a link to the complete Academic Integrity Policy that was approved by the University's Senate.

Plagiarism: Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated.

Academic Accommodation: You may need special arrangements to meet your academic obligations during the term. You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://www.carleton.ca/equity/ For an accommodation request, the processes are as follows:

- Pregnancy or Religious obligation: Please contact your instructor 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 see [https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

- **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 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). **Requests made within two weeks will be reviewed on a case-by-case basis.** After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website ([www.carleton.ca/pmc](http://www.carleton.ca/pmc)) 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/sexual-violence-support/](https://carleton.ca/sexual-violence-support/).

- **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 must be provided to students who compete or perform at the national or international level. Please contact your instructor 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, see [https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf](https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf)

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