

ENGINEERING 120: Design and Communication II

January-April 2020

Course Description

ENGR 120 introduces students to the principles of professional communication and engineering design with application to biomedical, civil, computer, electrical, mechanical and software engineering through practical projects to be undertaken by teams of students. It integrates development of writing, research, design and presentation skills through research and design projects. Students will acquire practical experience in the writing of short technical documents such as memoranda, letters and abstracts, and longer forms such as proposals and reports, with an emphasis on clarity, precision, and consistency of writing style and document design.

Instructors

This course is taught by instructors from the Faculties of both Engineering and English.

Engineering Instructor

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Plenary Lectures
Lab sections B01-B14

Communications Instructors

Suzan Last
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Comm. Sections

A08
A04, A05, A12
A02, A10
A11, A13
A01, A07, A09
A03, A06

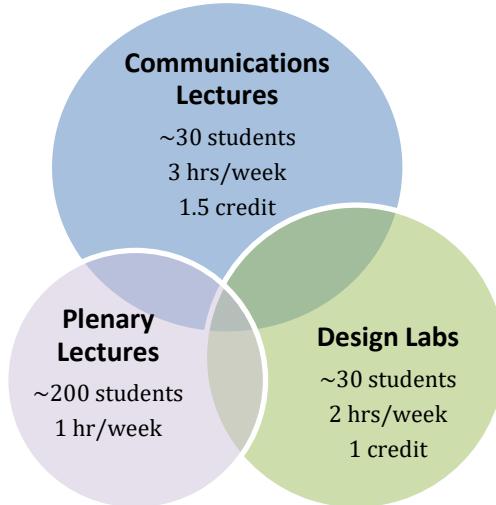
See online timetable and CourseSpaces for days, times, and locations of each section.

Course Overview

ENGR 120 is a 2.5 unit course that integrates instruction and activities in technical communications (written and oral) with engineering design. You will be introduced to fundamental principles and practical aspects of mechanical, electrical, and software engineering and will apply this knowledge in developing and implementing your own designs. In parallel, the course provides a practical introduction to the essential skills needed to write and present information as a technical professional. The course offers an opportunity to develop your skills as a writer, practice techniques and strategies used by technical writers, and work with other students to prepare a complete formal report following the model of the

Faculty of Engineering co-op work term report. Major written assignments will be based primarily on the design work that you do in this course.

The communication grade counts for 60% of the course grade and engineering design 40%. The contact hours for this course are allocated as follows:



Communication Seminars

The Communications classes will combine lecture, discussion, practice, and team meetings in the computer labs to enable you to learn and practice the technical communication skills covered in the course.

Textbook /Resources

You are not required to buy a textbook; an open source textbook for this course, *Technical Writing Essentials*, is available at <https://pressbooks.bccampus.ca/technicalwriting/>

In addition, the CourseSpaces for this course contains the resources you will need to read and use. Please check the CourseSpace site for your Communications section and Design labs regularly for course materials, assignment information, instructor policies, and due dates.

Plenary Lectures

Plenary lectures will be used primarily to provide the technical information you will need to undertake the Design Laboratory work, as well as discussion of topics on other aspects of the engineering profession.

Engineering Design Laboratory

You will work in teams to complete a number of design exercises and one major design project. Parts of the design exercises and the entire design project will be completed using the VEX robotic kits. You will be required to pay a deposit of \$80 for the VEX kits, \$50 of which will be refunded at the end of term.

See the ENGR 120 Design CourseSpace (B01-14) for details related to lab assignments and plenary lectures. Labs will begin the week of January 13th. **Please bring your \$80 deposit to the first laboratory session.**

Assignments

Detailed descriptions of assignments will be posted on CourseSpace sites and discussed in Communication Seminars, Plenary Lectures, and Design Laboratories.

You must pass both Communications and Design portions of the course to pass. Failing one portion means you must retake the entire course (both Communications and Design portions) again. You must attend all Design lab sessions and complete all Communications assignments to the satisfaction of your instructor to pass the course.

The Communications portion is worth 60%, and the Design portion is worth 40% of your final grade.

Assessment will be based on the following assignments. Each instructor may have slightly different assignment descriptions and may use different short assignments. There is no final exam for this course.

Assignment Overview			
Communications Assignments		Design Assignments	
Report 1 (500-600 words) Memo	15%	Plenary lecture attendance	10%
Report 2 (1000-1200 word) Design Project Proposal	20%	Design Assignments/Labs	36%
Report 3 (~2500 words) Recommendation Report (written in teams)	30%		
Presentation 1 - Individual	5%	Final Design Project	54%
Presentation 2 - Team	10%		
Miscellaneous short assignments and quizzes	20%		

Notes: *Failure to complete all required Communications assignments or Laboratory requirements will result in a grade of N being awarded for the course. This course has no supplemental exam. Peer assessments may be used to help the instructor determine individual grades.*

The final grade will be based on the following percentage-to-grade point conversion:

Grades	Percentage	
A+	90 – 100	Outstanding to excellent work that meets all and exceeds some expectations. <u>Consistently excellent work.</u>
A	85 – 89	
A-	80 – 84	
B+	77 – 79	Great to good work that meets most or all expectations in an acceptable manner, but could use minor improvements in some areas
B	73 – 76	
B-	70 – 72	
C+	65 – 69	Solid work that meets some expectations but needs obvious improvement in several areas.
C	60 – 64	
D	50 – 59	Marginal work; minimally acceptable.
F	0 – 49	Fail, no supplemental.
N	0 – 49	Did not write examination, complete all Labs or otherwise complete course requirements by the end of term or session; no supplemental exam.

Course Learning Objectives

All assignments and activities are designed to help students achieve the course learning objectives listed in the table below.

Engineering Design	Technical Communications
1. Follow a standard structured process to design a system comprised of computer, electrical, mechanical, and software subsystems	1. Follow a structured writing process to plan, draft, revise, and edit the types of documents commonly required of technical professionals (e.g.: routine correspondence, proposals, reports, presentations, and other forms of informational writing)
2. Apply discipline-specific technical knowledge in the design process and understand the relevance of that knowledge to the disciplines in professional practice	2. Apply a problem-solving approach to a communication task: <ul style="list-style-type: none">○ define the problem (need, goal, objectives, constraints)○ identify the purpose, audience, and required content for the task○ develop an effective production plan to communicate your solution
3. Identify business, social, environmental and regulatory considerations relevant to the execution of an engineering design project	3. Design documents for readability , using headings, lists and visual graphics effectively, and choosing a form and design appropriate to the purpose and audience
4. Demonstrate teamwork skills in the successful accomplishment of an engineering design project	4. Work effectively as part of a team , applying an understanding of team dynamics, effective communication in groups, collaborative writing, conflict management, and shared leadership
5. Apply selected tools for effective management of time and resources in the context of an engineering design project.	5. Prepare and deliver oral presentations using appropriate visual aids.
	6. Incorporate research sources effectively, ethically, and correctly into technical documents, using IEEE style
	7. Edit your own and others' writing so that it is clear, concise, readable, and complete, and conforms to the conventions of standard written English

Territorial Acknowledgement

All University of Victoria classes, including this one, take place on the traditional territory of the WS'ANEC' (Saanich), Lkwungen (Songhees), Wyomilth (Esquimalt) peoples of the Coast Salish Nation. We acknowledge that many of us are visitors and settlers on these lands and that it is our responsibility to seek and learn from opportunities for truth telling and reconciliation.

Attendance Policy

Attending class and taking good notes are the established *minimal* requirements for success in a university class. For this reason, all undergraduate students are bound by the Undergraduate Policy regarding Attendance. See <https://web.uvic.ca/calendar2019-01/undergrad/info/regulations/attendance.html#> which states:

"Students are expected to attend all classes in which they are enrolled. An academic unit may require a student to withdraw from a course if the student is registered in another course that occurs at the same time. In some courses students may be assigned a final grade of N or debarred from writing final examinations if they have failed to satisfy a minimum attendance requirement set by an instructor..."

Minimum attendance requirements for ENGR 120 are as follows:

- **Communications Lectures:** Students are expected to attend all lectures; those who miss more than 4 communications lectures in the term may be deregistered from the course.
- **Design Labs:** Students must attend ALL Design lab sessions, as these cannot be made up at any other time.
- **Plenary Lectures:** Students must attend all plenary lectures.

Since a failure to meet minimum attendance requirements may result in the student being deemed unable to meet minimal learning objectives for the course, and may have negative impacts on the student's team mates on group projects, students who fail to meet these requirements may be de-registered from both the Design and Communication portions of the course.

Attendance during the First Week of the Term:

Students who miss the first two classes of the term without notifying instructors in advance may be deregistered from the class.

Students are strongly discouraged from switching Design or Communications sections after the first week of classes, as teams are formed for term projects at the beginning of term.

Academic Integrity

Cheating, plagiarism and other forms of academic dishonesty are taken very seriously by both the University and the Faculty of Engineering. You should consult UVic's [Policy on Academic Integrity](#):

<https://web.uvic.ca/calendar2019-01/undergrad/info/regulations/academic-integrity.html#>

It is your responsibility to be familiar with these rules.

Please note the following policies from the calendar regarding citing sources and using editors:

Plagiarism

Single or multiple instances of inadequate attribution of sources should result in a failing grade for the work. A largely or fully plagiarized piece of work should result in a grade of F for the course.

Unauthorized Use of an Editors

An editor is an individual or service, other than the instructor, who manipulates, revises, corrects or alters a student's written or non-written work.

The use of an editor, whether paid or unpaid, is prohibited unless the instructor grants explicit written authorization.

Review by fellow students and tutoring that do not include editing are normally permitted. In addition to consulting with their instructors, students are encouraged to seek review of and feedback on their work that prompts them to evaluate the work and make changes themselves.

For example, students may:

- Seek help from tutors at the Centre for Academic Communication;
- Invite peers or others to review their work, suggest revisions, and provide feedback regarding its clarity and structure;
- Use software that identifies grammar, usage, and punctuation errors, but does not correct them.

Plagiarism detection software may be used to aid the instructor and/or TA's in the review and grading of some or all of the work you submit.

General University Policies

See the calendar entries on [Accommodation of Religious Observance](#) and [General University Policies](#) for information on

- Human Rights, Equity and Fairness
- Discrimination and Harassment Policy

Standards of Professional Behaviour

You are advised to read the Faculty of Engineering document *Standards for Professional Behaviour*, which contains important information regarding conduct in courses, labs, and in the general use of facilities:

<https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf>

Lab Safety Policy

Students are expected to comply with all lab safety instructions and rules. This includes following all instructions of Lab Instructors and Technicians. Food and drink are not permitted in the lab. **Non-compliance with these rules will result in grading penalties.** The first infraction of lab safety rules will result in a warning. The second infraction will result in expulsion from that lab session with a zero grade being assigned to any lab activity due in that session in addition to a 5% penalty on the course grade. A third infraction of lab safety rules will result in the student being assigned a failing grade for the design portion of the course.

Equity Statement

This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Center for Accessible Learning (CAL) located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes

Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructors and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.

Note to Students

Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact your academic advisor or the Chair of the department by email or the Chair's Secretary to set up an appointment.