ORIGINAL COURSE IMPLEMENTATION DATE: September 2021
REVISED COURSE IMPLEMENTATION DATE: September 2026
COURSE TO BE REVIEWED (six years after UEC approval)**:** March 2032
Course outline form version: 29/08/2024

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: ENGR 123	**Number of Credits:** 3 Course credit policy (105)
Course Full Title: Engineering Design I: Design and Drafting **Course Short Title:** Engineering Design I	
Faculty: Faculty of Applied and Technical Studies	**Department/School:** Physics

Calendar Description:

Introduces students to the engineering design process through individual exercises and a series of mini-projects and labs undertaken in groups. Students will study the engineering design process, relevant technical background (including engineering drawing and CAD tools), project/group dynamics, professional responsibility, and writing and presentation skills over the course of the term.

Prerequisites (or NONE):	Prerequisites for MATH 111.
Corequisites (if applicable, or NONE):	None.
Pre/corequisites (if applicable, or NONE):	PHYS 111.

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number: **ENGR 151**

Cross-listed with:

Equivalent course(s):

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar	45
Supervised laboratory hours (computer lab)	30
Total hours	**75**

Scheduled Laboratory Hours

Labs to be scheduled independent of lecture hours: **No**

Course Details

Special Topics course: **No**
(If yes, the course will be offered under different letter designations representing different topics.)

Directed Study course: **No**
(See policy 207 for more information.)

Grading System: **Letter grades**

Delivery Mode: **May be offered in multiple delivery modes**

Expected frequency: **Fall only**

Maximum enrolment (for information only)**: 24**

Prior Learning Assessment and Recognition (PLAR)

PLAR cannot be awarded for this course because:

Content and instruction are mandated by governing body.

Transfer Credit *(See **bctransferguide.ca**.)*

Transfer credit already exists: **Yes**

Submit outline for (re)articulation: **Yes**
(If yes, fill in transfer credit form.)

Department approval	**Date of meeting:**	September 2025
Faculty Council approval	**Date of meeting:**	October 9, 2025
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	March 27, 2026

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

Upon successful completion of this course, students will be able to:

1. Apply the engineering design process to open-ended engineering design problems.
2. Describe the concept of a profession, the unique aspects of the engineering profession, and the different engineering disciplines.
3. Apply engineering decision-making, design processes, and prototyping to well-defined and well-constrained engineering problems.
4. Apply scientific principles to the understanding and analysis of engineering problems, and to the design of potential solutions.
5. Describe the contributions that an engineer can make to society as well as the impact (both positive and negative) that an engineering project can have on society.
6. Participate equitably as a member of a team, demonstrating initiative, professionalism, and effective intra-team communication.
7. Deliver original and effective oral presentations, and technical reports.
8. Demonstrate ability using both hand-sketching techniques and electronic CAD tools to create engineering 2D Orthographic, 3D Isometric, and 3D Perspective drawings.
9. Apply engineering tools, including hand tools, prototyping tools, and software tools to create, test, and analyze physical embodiments of an engineering design.
10. Explain the importance of Engineers and Geoscientists BC guidelines for Indigenization and Reconciliation and how they apply to aspects of professional practice, such as the engineering design process and stakeholder involvement.
11. Explain Engineers and Geoscientists BC programs and initiatives for Equity, Diversity, and Inclusion.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Final exam:	35%	Quizzes/tests/midterm:	25%	Project:	25%
Assignments:	15%		%		%

Details:

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, tutorial work, group projects, invited speakers.

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. Open Educational Resources (OER) should be included whenever possible. If more space is required, use the Supplemental Texts and Resource Materials form.)*

	Type	Author or description	Title and publication/access details	Year
1.	Textbook	Ostafichuk and Jaeger	Introduction to Engineering	2023
2.	Textbook	Dunwoody, B. et al.	Fundamental Competencies for Engineers	2017
3.				

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Course Content and Topics

Module 1: Engineering profession
Module 2: Engineering design process
- Introduction to teamwork
- Communication
- Engineering design process
- Engineering fundamentals

Module 3: Engineering drawing
- Isometric / orthographic
- Computer Aided Drawing
- 3D rendering / prototyping tools