COURSE OUTLINE		
TERM: Fall 2026	**COURSE NO:** APSC 130	
INSTRUCTOR:	**COURSE TITLE:** Technical Drafting and Computer-Aided Design	
OFFICE: **LOCAL:** **E-MAIL:** @capilanou.ca	**SECTION NO(S):**	**CREDITS:** 3.0
OFFICE HOURS:		
COURSE WEBSITE: APSC 130 - Technical Drafting and Computer-Aided Design - Capilano University		

Capilano University is named after Chief Joe Capilano (1854–1910), an important leader of the Sḵwx̱wú7mesh (Squamish) Nation of the Coast Salish Peoples. We respectfully acknowledge that our campuses are located on the unceded territories of the səlilwətaɬ (Tsleil-Waututh), shíshálh (Sechelt), Sḵwx̱wú7mesh (Squamish), and xʷməθkʷəy̓əm (Musqueam) Nations.

COURSE FORMAT
Four hours per week, for a 15-week semester, which includes two weeks for final exams.

COURSE PREREQUISITES
Math Placement Test (Calculus MPT); or Pre-calculus 12; or MATH 105; or BMTH 054

CALENDAR DESCRIPTION
In this hands-on course, students will be introduced to hand drafting and computer-aided drafting techniques applied to engineering designs. Although it is intended for students in the Engineering programs, this course will be of interest to students in any discipline that involves the design of materials, structures, devices, systems, or processes according to specified criteria. Students will learn to communicate technical material in graphical form, and to read, understand, and produce basic engineering drawings. In addition, students will become familiar with some of the conventions and practices of graphical communication.

COURSE NOTE
APSC 130 is an approved Science course.
APSC 130 is an approved Quantitative/Analytical course for baccalaureate degrees.
APSC 130 is an approved Numeracy course for Cap Core requirements.
APSC 130 is an approved Science and Technology course for Cap Core requirements.
APSC 130 is an approved Experiential course for Cap Core requirements.

REQUIRED TEXTS AND/OR RESOURCES

Textbook:

Finkelstein, Ellen. AutoCAD 2015 and AutoCAD LT 2015 Bible. Wiley, John & Sons, 2014.

Drafting Equipment:

1. Metric scale 987-19-SI with scaling (1:1, 1:2, 1:5, 1:10,1:20 and 1:50)
2. Protractor with 180 degrees graduation
3. Set Squares (45-degree triangle and 30/60-degree triangle)
4. Eraser and Eraser Shield
5. Circle Template
6. Compass (preferably a compass with a stabilizer between the arms)
7. 2 Mechanical Pencils (HB, 2H lead)
8. Brush for cleaning eraser bits
9. Vellum paper (11" by 17") – 20 sheets
10. Tape and sandpaper (for sharpening pencils)
11. French Curve
12. Engineering calculator
13. Dividers (optional)
14. Ellipse template (optional)

A package containing all required drafting equipment is available at the Bookstore. Alternatively, you may purchase each item separately. Please obtain the required items in the list above before your first lab. Drafting labs will begin during the second week of classes. The manual drafting equipment must be brought to the drafting lab each week.

Computer Equipment:

It is recommended that students have their own personal storage device such as USB flash drive capable of storing several large graphical data files (+512 MB). Computer labs will begin after the manual drafting classes.

Computer Access:

Drop-in access to the University computers is available during the hours posted outside each lab, subject to computer availability. Please respect the directions of the instructor in the lab if asked to leave the lab due to a class booking.

Design Project Equipment:

A prototype is required in the design project and will be made with 3D printers available in the Engineering Lab.

COURSE STUDENT LEARNING OUTCOMES

On successful completion of this course, students will be able to do the following:

- Communicate technical material in graphical form.
- Read, analyze, and produce basic engineering drawings and recognize some of the conventions and practices of graphical communication for engineers.

- Utilize a computer-aided design (CAD) software package.
- Use a 3D printer and fabricate a prototype for a design project

Students who complete this Numeracy course will be able to do the following:

- Apply both analytical and numerical skills to solve problems.
- Summarize and analyze data in quantitative forms.
- Interpret and draw conclusions from an analysis of quantitative data.
- Represent quantitative information in a variety of forms (e.g. symbolically, visually, numerically, and verbally).
- Incorporate quantitative evidence in support of an argument.

Students who complete this Science and Technology course will be able to do the following:

- Apply numerical and computational strategies to solve problems.
- Evaluate scientific information (e.g. distinguish primary and secondary sources, assess credibility and validity of information).
- Demonstrate how a problem, concept or process can be modeled numerically, graphically or algorithmically.
- Participate in scientific inquiry and communicate the elements of the process, including making careful and systematic observations, developing and testing a hypothesis, analyzing evidence, and interpreting results.

Students who complete this Experiential course will be able to do the following:

- Critically reflect on their progress and development in the context of the course and assess the utility of the acquired knowledge, skills, and values in the learner's personal, academic, or professional trajectory.
- Apply the skills and knowledge of a given discipline or professional context, including working collaboratively in both leadership and team roles.

COURSE CONTENT

Topics	Weeks (approx.)
Instrument Drafting, Geometry in Technical Drafting; Lettering for Pencil Sketch, Sketch Line Weights and Drawing Constructions	1.0
Principle of Projection; Sketch Orthographic Views; Sketch Sectional Views; Sketch Auxiliary Views; Sketch Pictorial Views	2.5
Dimensioning and Geometric Tolerance; Sketch Development Drawings; Sketch Intersection Drawings; Sketch Threads and Fasteners; Introduction to Rapid Prototyping and 3D Printers	2.5
AutoCAD Fundamentals and Basic Commands; Line-types and Drawing Construction Using AutoCAD; Setting up and Creating Your First Drawing	1.5

Making Orthographic Views with AutoCAD; Making Sectional Views with AutoCAD; Making Auxiliary Views with AutoCAD; Making Isometric Views with AutoCAD	2.0
Dimensioning with AutoCAD; Introduction to AutoCAD 3D (brief) and Introduction to Inventor; Direct modeling: Extrusion, Revolve, Datum, Layers, Pattern, Sweep	1.5
Assemblies and Exploded Assemblies; Shell Structures	1.0
Tests	1.0
Final Exam Period	2.0

Lectures: Lectures are instructional classes on manual drafting and the use of AutoCAD. Students are encouraged to study any additional books related to technical drafting, engineering graphics and AutoCAD. AutoCAD and Inventor software are available on campus.

EVALUATION PROFILE

Final grades for the course will be computed based on the following schedule:

Drafting Labs: in-class practice	15%
AutoCAD Labs: in-class practice	15%
Drafting Labs: quiz	5%
AutoCAD Labs: quiz	5%
Drafting Labs: homework assignment	10%
AutoCAD Labs: design project/prototype fabrication	15%
Midterm exam-Drafting Evaluation Test	15%
Final exam-AutoCAD Evaluation Test	15%
Performance Evaluation	5%
TOTAL	100%

Performance Evaluation:
In the absence of exceptional circumstances, which are determined at the instructor's discretion, the performance evaluation component of the final grade will be prorated to the rest of the grade. The most common circumstance justifying an increased performance evaluation mark is a marked improvement in performance in the final examination relative to the tests during the term, where the instructor feels justified in giving an elevated grade.

GRADING PROFILE

A+ = 90-100	B+ = 77-79	C+ = 67-69	D = 50-59
A = 85-89	B = 73-76	C = 63-66	F = 0-49
A- = 80-84	B- = 70-72	C- = 60-62	

Incomplete Grades
Grades of Incomplete "I" are assigned only in exceptional circumstances when a student requests extra time to complete their coursework. Such agreements are made only at the request of the student, who is responsible to determine from the instructor the outstanding requirements of the course.

Late Assignments
Assignments are due at the beginning of the class, unless otherwise announced. Late assignments may receive a grade of zero.

Missed Exams/Quizzes/Labs etc.
Normally, a score of zero will be given for a missed exam, test, quiz, lab, etc. In some exceptional situations, the student will be permitted to write a make-up test, defer the lab to a later date or to replace the score by other marks.

The situations in which a score of zero may be avoided are those for which the student meets all of the following conditions:

1. Circumstances are beyond the control of the student which resulted in the exam, test, quiz, lab, etc. to be missed. Such circumstances include serious illness or injury, or death of close family member. They do not include forgetting about the test, lack of preparation for the test, work-related or social obligations.
2. The student has notified the instructor (or the School of STEM office staff, if the instructor is not available) about the missed exam, test, quiz, lab, etc. Such notification must occur in advance, if possible, or at the latest, on the day of the exam, test, quiz, lab, etc.
3. Proof of the circumstances may be requested. Proof of illness or injury may require a note from a doctor, who may also be consulted.
4. The student has been fully participating in the course up until the circumstances that prevented the writing of the exam, test, quiz, lab, etc. Fully participating means attending almost all classes and turning in almost all assignments in the course.

The options offered to the student who meets the four conditions are decided by the instructor. They will not necessarily meet the convenience of the student. Accommodations can be made to honour community needs and traditional practices.

Attendance
Attendance at lectures, labs and tutorials is expected. You are responsible for all information given in the lectures, labs and tutorials, including the times of tests and deadlines for assignments.

English Usage
Students are expected to use correct standard English in their written and oral assignments, exams, presentations and discussions. Failure to do so may result in reduced grades in any part of the Evaluation Profile. Please refer to the guidelines provided in the Capilano Guide to Writing Assignments (available from the University Bookstore).

Electronic Devices
Students may use electronic devices during class for note taking and math calculations only.

On-line Communication
Outside of the classroom, instructors will (if necessary) communicate with students using either their official Capilano University email or eLearn; please check both regularly. Official communication between Capilano University and students is delivered to students' Capilano University email addresses only.

UNIVERSITY OPERATIONAL DETAILS

Tools for Success
Many services are available to support student success for Capilano University students. A central navigation point for all services can be found at: https://www.capilanou.ca/student-services/

Capilano University Security: download the CapU Safe Alert App

Policy Statement (S2009-06)
Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Academic Integrity, Academic Probation and other educational issues. These and other policies are available on the University website.

Academic Integrity (S2017-05)
Any instance of academic dishonesty or breach of the standards of academic integrity is serious and students will be held accountable for their actions, whether acting alone or in a group. See policy and procedures S2017-05 Academic Integrity for more information:
https://www.capilanou.ca/about-capu/governance/policies/

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances, are prohibited and will be handled in accordance with the Student Academic Integrity Procedures.

Academic dishonesty is any act that breaches one or more of the principles of academic integrity. Acts of academic dishonesty may include but are not limited to the following types:

Cheating: Using or providing unauthorized aids, assistance or materials while preparing or completing assessments, or when completing practical work (in clinical, practicum, or lab settings), including but not limited to the following:

- Copying or attempting to copy the work of another during an assessment;
- Communicating work to another student during an examination;
- Using unauthorized aids, notes, or electronic devices or means during an examination;
- Unauthorized possession of an assessment or answer key; and/or,
- Submitting of a substantially similar assessment by two or more students, except in the case where such submission is specifically authorized by the instructor.

Fraud: Creation or use of falsified documents.

Misuse or misrepresentation of sources: Presenting source material in such a way as to distort its original purpose or implication(s); misattributing words, ideas, etc. to someone other than the original source; misrepresenting or manipulating research findings or data; and/or suppressing aspects of findings or data in order to present conclusions in a light other than the research, taken as a whole, would support.

Plagiarism: Presenting or submitting, as one's own work, the research, words, ideas, artistic imagery, arguments, calculations, illustrations, or diagrams of another person or persons without explicit or accurate citation or credit.

Self-Plagiarism: Submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already been granted without permission of the instructors.

Prohibited Conduct: The following are examples of other conduct specifically prohibited:

- Taking unauthorized possession of the work of another student (for example, intercepting and removing such work from a photocopier or printer, or collecting the graded work of another student from a stack of papers);
- Falsifying one's own and/or other students' attendance in a course;
- Impersonating or allowing the impersonation of an individual;
- Modifying a graded assessment then submitting it for re-grading; or,
- Assisting or attempting to assist another person to commit any breach of academic integrity.

Sexual Violence and Misconduct

All Members of the University Community have the right to work, teach and study in an environment that is free from all forms of sexual violence and misconduct. Policy B401 defines sexual assault as follows:

> Sexual assault is any form of sexual contact that occurs without ongoing and freely given consent, including the threat of sexual contact without consent. Sexual assault can be committed by a stranger, someone known to the survivor or an intimate partner.

Safety and security at the University are a priority and any form of sexual violence and misconduct will not be tolerated or condoned. The University expects all Students and Members of the University Community to abide by all laws and University policies, including B.401 Sexual Violence Policy and B.401.1 Sexual Violence Procedure (found on Policy page https://www.capilanou.ca/about-capu/governance/policies/)

Emergencies: Students are expected to familiarise themselves with the emergency policies where appropriate and the emergency procedures posted on the wall of the classroom.