

# COURSE SYLLABUS



COURSE TITLE:	ENGR 262 – Analytical Methods
CLASS SECTION:	X01A and X01B
TERM:	2023F
COURSE CREDITS:	3
DELIVERY METHOD(S):	Lecture & Lab

Camosun College campuses are located on the traditional territories of the Lək̓ʷəŋən and WSÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here. Learn more about Camosun's [Territorial Acknowledgement](#).

For COVID-19 information please visit <https://legacy.camosun.ca/covid19/index.html>.

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*Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.*

## INSTRUCTOR DETAILS

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NAME:	Adel Shoaib
EMAIL:	<a href="mailto:ShoaibA@camosun.ca">ShoaibA@camosun.ca</a>
OFFICE:	TEC 261
HOURS:	See office door

*As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.*

## CALENDAR DESCRIPTION

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This course will cover methods in structural and fluids engineering, review statics and analysis of structure, and area properties, and include internal loads, shear and bending moment diagrams for structures, products of inertia and Mohr's circle for inertia. Topics may include force and displacement methods and fluid mechanics.

PREREQUISITE(S): none

## COURSE LEARNING OUTCOMES / OBJECTIVES

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Upon successful completion of this course a student will be able to:

- Demonstrate the fundamental principles of engineering structural analysis by:
  - Preparing shear and bending moment diagrams and deflected shape of beams and frames under load,
  - Using slope deflection and moment distribution method to analyze statically indeterminate beams and frames,
  - Using matrix methods to analyze statically indeterminate 2D trusses, and

- Determining the principal moments of inertia for common structural shapes
- Demonstrate the fundamental principles of engineering fluid mechanics by:
  - Calculating forces on partially of fully submerged plane and curved areas,
  - Applying Archimedes' Principle to analyze buoyancy and stability conditions with respect to floating and submerged bodies,
  - Predicting friction and minor losses for laminar and turbulent flow,
  - Selecting pumps for piping systems, and
  - Determining flow rates and pressure losses in piping systems.

#### REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

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- There are no required textbooks for this course. Any textbook on statics/structural analysis would be useful for reviewing concepts. Additional learning materials and notes will be made available to students throughout the term.
- Recommended Textbook
  - R.C. Hibbeler, *Structural Analysis*, Prentice Hall, 10<sup>th</sup> Edition, 2018.

#### COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

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The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

WEEK	DATE RANGE	LECTURE TOPIC	LAB TOPIC
		<i>Thursdays 10:00 – 11:20 in TEC 174</i> <i>Thursdays 10:00 – 11:20 in CBA 101</i>	<i>X01A: Wednesdays 2:30 – 4:20 in CBA 143</i> <i>X01B: Wednesdays 9:30 –11:20 in CBA 142</i>
1	Sep 04-08	Statics Review, Introduction to Equilibrium and Support Idealization	No Labs
2	Sep 11-15	Stability and determinacy of structures	Practice/Problem Solving
3	Sep 18-22	Internal forces, Shear & Moment in Beams and Frames	Practice/Problem Solving
4	Sep 25-29	Shear & Moment in Beams and Frames, Truss analysis	Practice/Problem Solving
5	Oct 02-06	Truss Analysis, Influence lines	Practice/Problem Solving
6	Oct 9-13	Tuesday: Influence lines/Review <b>Thursday: Midterm Exam 1</b>	Practice/Problem Solving
7	Oct 16-20	Deflection in Beams and Frames	Practice/Problem Solving
8	Oct 23-27	Deflection in Beams and Frames	Practice/Problem Solving
9	Oct 30- Nov 3	Conjugate Beam Method	Practice/Problem Solving
10	Nov 06-10	Energy Method for Beams and Frames	Practice/Problem Solving

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11	Nov 13-17	<b>Tuesday: Midterm Exam 2</b> Thursday: Introduction to Indeterminate Structures	Practice/Problem Solving
12	Nov 20-24	Force Method- 1 degree	Practice/Problem Solving
13	Nov 27-Dec 01	Force Method – 2 degrees or more	Practice/Problem Solving
14	Dec 04-08	Introduction to displacement methods (slope-deflection & Moment Distribution)	Practice/Problem Solving

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced noticed is required. Deadlines scan be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

## EVALUATION OF LEARNING

DESCRIPTION	COMMENTS	WEIGHTING
Midterm 1		30%
Midterm 2		30%
Final Exam		30%
Lab Work		10%
<b>TOTAL</b>		<b>100%</b>

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information.

<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

## COURSE GUIDELINES & EXPECTATIONS

- Presence is required at all scheduled course components.
- You must pass final exam (minimum of 50%) to pass the course.

## SCHOOL OR DEPARTMENTAL INFORMATION

Equity, diversity, and inclusion (EDI) are central to Camosun's culture and values. The Camosun community and the engineering community at large commit to pursuing equity in education regardless of race, heritage, religion, gender or gender identity, and ability. We learn best when we feel safe. Inappropriate, hateful or demeaning comments or actions will not be tolerated. Your suggestions on how to make your experience here better are encouraged and appreciated. Please let me know of any ways to improve your experience at Camosun. If you wish to know more about Camosun's EDI policy, please see the EDI page on the college's website: <http://camosun.ca/about/policies/equity-diversity-inclusion.html>

## STUDENT RESPONSIBILITY

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Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies; demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

## SUPPORTS AND SERVICES FOR STUDENTS

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Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Support Service	Website
Academic Advising	<a href="http://camosun.ca/advising">http://camosun.ca/advising</a>
Accessible Learning	<a href="http://camosun.ca/accessible-learning">http://camosun.ca/accessible-learning</a>
Counselling	<a href="http://camosun.ca/counselling">http://camosun.ca/counselling</a>
Career Services	<a href="http://camosun.ca/coop">http://camosun.ca/coop</a>
Financial Aid and Awards	<a href="http://camosun.ca/financialaid">http://camosun.ca/financialaid</a>
Help Centres (Math/English/Science)	<a href="http://camosun.ca/help-centres">http://camosun.ca/help-centres</a>
Indigenous Student Support	<a href="http://camosun.ca/indigenous">http://camosun.ca/indigenous</a>
International Student Support	<a href="http://camosun.ca/international/">http://camosun.ca/international/</a>
Learning Skills	<a href="http://camosun.ca/learningskills">http://camosun.ca/learningskills</a>
Library	<a href="http://camosun.ca/services/library/">http://camosun.ca/services/library/</a>
Office of Student Support	<a href="http://camosun.ca/oss">http://camosun.ca/oss</a>
Ombudsperson	<a href="http://camosun.ca/ombuds">http://camosun.ca/ombuds</a>
Registration	<a href="http://camosun.ca/registration">http://camosun.ca/registration</a>
Technology Support	<a href="http://camosun.ca/its">http://camosun.ca/its</a>
Writing Centre	<a href="http://camosun.ca/writing-centre">http://camosun.ca/writing-centre</a>

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

## COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

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### Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](#) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

### Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

### Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

### Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

### Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

### Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

### Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures" (<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

### Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

### Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and [camosun.ca/sexual-violence](http://camosun.ca/sexual-violence). To contact the Office of Student Support: [oss@camosun.ca](mailto:oss@camosun.ca) or by phone: 250-370-3046 or 250-370-3841

### Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

**Changes to this Syllabus:** Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.