

COURSE SYLLABUS



COURSE TITLE:	CIVE 192 – Mechanics of Materials
CLASS SECTION:	X01A/B
TERM:	2024S
COURSE CREDITS:	3
DELIVERY METHOD(S):	In-person Lectures, Labs and Seminars

Camosun College respectfully acknowledges that our campuses are situated on the territories of the Ləkʷəŋən (Songhees and Kosapsum) and WSÁNEĆ peoples. We honour their knowledge and welcome to all students who seek education here.

INSTRUCTOR DETAILS

NAME:	Peter Burrage
EMAIL:	Burrage@camosun.ca
OFFICE:	TEC 112
HOURS:	See office door or D2L

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

Students are introduced to mechanics theory relevant to structural design. Students are shown the stress-strain relationships and are introduced to the theories of bending, shear, torsion and beam deflections that will be used in later structural design courses. Students are also shown plane stress transformation, column theory and influence lines used in structural analysis.

PREREQUISITE(S):	C in CIVE 191
PRE or CO-REQUISITE(S):	C in MATH 193
EXCLUSION(S):	none

COURSE LEARNING OUTCOMES / OBJECTIVES

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

- Conduct and apply relevant safety regulations and best practices in the lab and in the field.
- Calculate stresses, strains and displacements for axial, torsional and bending problems.
- Calculate shear, tensile and bearing stresses in connections.
- Demonstrate the use of factor of safety in allowable stress design calculations.
- Use flexure formula, shear formula and structural properties of various sections for analysis.
- Develop equations for shear, moment and deflections for beams from first principles. Draw shear, moment and deflected shape diagrams for beams.
- Calculate shear, moment and deflected shape diagrams for beams using tables and superposition.
- Perform stress analysis for combined loading including combinations of axial, torsion and bending loads and determine stress on an element using Mohr's Circle for plane stress.
- Use the buckling equations of Euler to calculate critical load and critical stress.
- Draw influence lines for reactions, shears and moments in structures.
- Perform statically determinate and indeterminate analysis by various methods such as virtual work, conjugate beam, and slope deflection.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

- Textbook: R.C. Hibbeler, Statics and Mechanics of Materials, 5th Edition, Pearson Education Inc. 2016. ISBN 9780134382593

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

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

- Lectures (all sections):
 - *Tuesdays 10:30 – 12:20 in TEC 181*
 - *Wednesdays 3:00 – 3:50 in TEC 181*
- Seminars:
 - *X01A - Tuesdays 1:30 – 3:20 in TEC 181*
 - *X01B - Tuesdays 3:30 – 5:20 in TEC 181*
- Labs:
 - *X01A - Mondays 9:30 – 11:20 in TEC 123*
 - *X01B - Mondays 2:00 – 3:50 in TEC 123*

WEEK	DATE RANGE	LECTURE TOPIC	LAB TOPIC
1	May 6 to 10	Tuesday: Shear and Bending Moment Diagrams Wednesday: Shear and Bending Moment Diagrams	No Labs
2	May 13 to 17	Tuesday: Shear and Bending Moment Diagrams Wednesday: Properties of Materials	No Labs
3	May 20 to 24	Tuesday: Stress and Strain Wednesday: Axial Load	No Labs (Victoria Day)
4	May 27 to 31	Tuesday: Axial Load Wednesday: Torsion	Lab 1A – Elastic Tensile Test
5	Jun 3 to 7	Tuesday: Torsion Wednesday: Bending	Lab 1A – Elastic Tensile Test
6	Jun 10 to 14	Tuesday: Bending Wednesday: Bending	Lab 1B – Plastic Tensile Test
7	Jun 17 to 21	Tuesday: Midterm Exam Wednesday: Transverse Shear	Lab 2A – Torsion Test
8	Jun 24 to 28	Tuesday: Transverse Shear Wednesday: Beam Deflection	Lab 2A – Torsion Test
9	Jul 1 to 5	Tuesday: Beam Deflection Wednesday: No Class	No Labs (Canada Day)
10	Jul 8 to 12	Tuesday: Combined Stress Wednesday: Stress and Strain Transformation	No Labs
11	Jul 15 to 19	Tuesday: Stress and Strain Transformation Wednesday: Column Buckling	Lab 2B – Beam Stresses
12	Jul 22 to 26	Tuesday: Column Buckling Wednesday: Indeterminate Beams	Lab 2B – Beam Stresses
13	Jul 29 to Aug 2	Tuesday: Indeterminate Beams Wednesday: Influence Lines	Lab 2C – Beam Bending
14	Aug 5 to 9	Tuesday: Review Wednesday: No Class	Lab 2C – Beam Bending

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 notice is required. Deadlines can be reviewed on the [CAL exams page](https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams). <https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams>

EVALUATION OF LEARNING

DESCRIPTION	WEIGHTING
Quizzes	15%
Midterm Exam	25%
Labs	20%
Final Exam	40%
	TOTAL 100%

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](https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf) policy for more information.
<https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf>

COURSE GUIDELINES & EXPECTATIONS

- There will be two lab reports that will be completed in groups.
- You must pass final exam (minimum of 50%) to pass the course.

SCHOOL OR DEPARTMENTAL INFORMATION

Department:

- Civil Engineering Department. Chair is Robin Ley, TEC 265.
- See the chair if you need:
 - program help such as working out a part-time schedule
 - help with transfer credits
 - info on services from other departments.

See your instructor if you need help with the course.

School: School of Trades and Technology. Office TEC 169

- Dean is Eric Sehn
- Associate Dean is Ken Kosik
- Both are in TEC 169
- Student issues are looked after by the Associate Dean. However, if you need anything, go to the department chair first.

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 us or the department chair know 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

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

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	camosun.ca/services/academic-supports/academic-advising
Accessible Learning	camosun.ca/services/academic-supports/accessible-learning
Counselling	camosun.ca/services/health-and-wellness/counselling-centre
Career Services	camosun.ca/services/co-operative-education-and-career-services
Financial Aid and Awards	camosun.ca/registration-records/financial-aid-awards
Help Centres (Math/English/Science)	camosun.ca/services/academic-supports/help-centres
Indigenous Student Support	camosun.ca/programs-courses/iecc/indigenous-student-services
International Student Support	camosun.ca/international
Learning Skills	camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills
Library	camosun.ca/services/library
Office of Student Support	camosun.ca/services/office-student-support
Ombudsperson	camosun.ca/services/ombudsperson
Registration	camosun.ca/registration-records/registration
Technology Support	camosun.ca/services/its
Writing Centre	camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills

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.

Academic Integrity

Students are expected to comply with all College policy regarding academic integrity; which is about honest and ethical behaviour in your education journey. The following guide is designed to help you understand your responsibilities: <https://camosun.libguides.com/academicintegrity/welcome>

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.13.pdf> for Camosun's Academic Integrity policy and details for addressing and resolving matters of academic misconduct.

Academic Accommodations for Students with Disabilities

Camosun College is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging appropriate academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a documented disability and think you may need accommodations, you are strongly encouraged to contact the Centre for Accessible Learning (CAL) and register as early as possible. Please visit the CAL website for more information about the process of registering with CAL, including important deadlines:

<https://camosun.ca/cal>

Academic Progress

Please visit <https://camosun.ca/sites/default/files/2023-02/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 <https://camosun.ca/sites/default/files/2021-05/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <https://camosun.ca/registration-records/tuition-fees#deadlines>.

Grading Policy

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.5.pdf> for further details about grading.

Grade Review and Appeals

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

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 (see [Medical/Compassionate Withdrawals policy](#)). Please visit <https://camosun.ca/services/forms#medical> to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence

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 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 Policy: <https://camosun.ca/sites/default/files/2021-05/e-2.9.pdf> and camosun.ca/services/sexual-violence-support-and-education.

To contact the Office of Student Support: 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 <https://camosun.ca/sites/default/files/2021-05/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

Looking for other policies?

The full suite of College policies and directives can be found here: <https://camosun.ca/about/camosun-college-policies-and-directives>

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.
