CAMOSUN COLLEGE
School of Trades and Technology
Civil Engineering Department

CIVE 192 – Mechanics of Materials
Summer 2021
REV02

COURSE OUTLINE

Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1 Instructor Information

Instructors	Holly Monaghan
Office hours	Holly Monaghan: text or email to arrange a specific time. We'll work out times, once I know your group's schedule
Location	Home/Remotes Office
Phone/Text	778.268.0185
E-mail	MonaghanH@camosun.bc.ca
Website	https://online.camosun.ca/d2l/

2 Prerequisites and Corequisites

Prerequisite:
C in CIVE 191
Pre/Co-Requisite:
C in MATH 193

3 Hours and Credits

	Course Activity	Hours / Week	Instruction – No of Weeks *(Q=11; S=14; "P or S" = 7)*
☒	Lecture (Direct Instruction)	3	14
☒	Seminar (Direct Instruction)	2	14
☒	Lab /Collaborative Learning	2	14
☐	Supervised Field Practice		
☐	Workplace Integrated Learning (Coop, Internship, etc.)		
☐	Other*(please note):		

Credits = 4

4 Short Description

Students are introduced to theory relevant to structural design including: internal stress-strain relationships; theories of bending, shear, torsion and beam deflections; plane stress transformation; column theory and influence lines.

The course will be delivered in a combination of both 'live' (on D2L Collaborate) and recorded content (labs). The Collaborate sessions will be recorded for you to review.

5 Intended Learning Outcomes

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

- Conduct themselves in the lab and in the field in accordance with relevant safety regulations and best practices.
- 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

6 Course Content and Schedule

Week	*Comments*	*Topic*	*Lab Schedule*
1		Shear and Bending Moment Diagrams	
2		Stress and Strain	
3		Properties of Materials	Lab 1A- Elastic Tensile Test
4	May 24th,(no class on Monday)	Axial Loads / Stress & Compatibility Equations	
5		Torsion – **Midterm Exam 1**	
6		Bending	Lab 1B- Plastic Tensile Test
7		Transverse Shear	Lab 2A- Torsion
8		Beam Deflection	
9	July 1st (no class on the Thursday)	Stress and Strain Transformation	Lab 2B- Bending
10		Column Buckling **- Midterm Exam 2**	Lab 2C- Beam Deflection
11		Indeterminate Beam/Influence Lines	
12		Review	
13		Review	
14	Aug 2 (school closed)	**Exam Week**	

7 Basis of Student Assessment

Component	*Weighting %*
Assignments (8)	20
Mid-term Exams	30
Labs	10
Final Exam	30
Participation	10
TOTAL	100

8 Required Materials

a) Texts – R.C. Hibbeler, Statics and Mechanics of Materials, 5th Edition, Pearson Education Inc. 2016. ISBN 9780134382593
b) Other – TBD

9 College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support &

education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

10 Grading System

☒ *Standard Grading System (GPA)*
☐ *Competency Based Grading System*

See Camosun Grading Policy E-1.5

11 A Safe Place for EVERYONE

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 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

12 Class Policies

- Assignments and labs will be submitted through D2L at http://online.camosun.ca/
- Assignments and labs must be presented in neat, clear, tidy form. Examples will be provided on the D2L for reference.
- Late assignments and labs will have 10% deducted per late date. Assignments and labs submitted after graded items have been returned are worth 0.
- You must complete all assignments and labs prior to the final exam to be permitted to write the final exam
- You must pass the final exam (minimum of 50%) to pass the course