

CAMOSUN COLLEGE
School of Trades and Technology
Civil Engineering Department

CIVE 292 – Structural Design 2
Winter, 2020

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

Instructor	Andrew MacDonald
Office hours	By Appointment. Typically available Monday and Thursday morning
Location	TEC 267 (4-person office, so will need to meet at pre-arranged location)
Phone	250-370-3862 Alternative: _____
E-mail	macdonalda@camosun.bc.ca
Website	http://civil.camosun.bc.ca/student/

2 Prerequisites and Corequisites

Prerequisite: CIVE 291

3 Hours and Credits

Course Activity

- Lecture (Direct Instruction)**
- Seminar (Direct Instruction)**
- Lab /Collaborative Learning**
- Supervised Field Practice**
- Workplace Integrated Learning** (*Coop, Internship, etc.*)
- Other***(*please note*):

Hours / Week	Instruction – No of Weeks <small>(Q=11; S=14; "P or S" = 7)</small>
2	14
3	14

Credits = 3

4 Short Description

Students learn to design steel and concrete building elements including beams, columns, slabs and connections using the relevant Canadian design codes. Building Information Modeling (BIM) systems are also introduced.

5 Intended Learning Outcomes

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

- Explain the use of steel and concrete in building construction.
- Calculate material resistance for steel and concrete structural components in accordance with relevant CSA Standards.
- Design steel elements including beams, columns, bolted and welded connections.
- Design a preliminary Gerber-Girder system.
- Describe pre- and post-stressing and reinforcing concepts used to overcome concrete's tensile limitations.
- Design concrete elements including beams, one-way slabs, and columns.
- Understand construction load sequencing.
- Design a composite floor system.
- Design basic concrete foundations including pad and strip footings.
- Describe the use of Building Information Modeling (BIM) systems.
- Use BIM to model structural components of a building including beams, columns, braces, floor systems and foundations.

6 Course Content and Schedule

<i>Week</i>	<i>Topic</i>
1	Introduction to Steel
2	Steel Beams / Introduction to Revit
3	Steel Columns / Drawings and Specifications
4	Steel Connections / Revit Steel Buildings
5	Composite Beams / Steel Shop Drawings
6	Introduction to Concrete
7	- <i>Reading Break</i> -
8	Midterm Exam
9	Concrete Beams / Revit concrete Buildings
10	Shear in Concrete Beams / Concrete Shop Drawings and Field Reviews
11	Shear in Concrete Slabs / Revit Pre-Stressed Concrete Beams
12	Concrete Columns / Revit Terrain Import
13	Foundations
14	Review
15	Exam Week

7 Basis of Student Assessment

<i>Component</i>	<i>Weighting %</i>	<i>Comments</i>
Assignments	20	Anticipated: 5 Written Take-home / 4 Revit
Mid-term Exam	30	
Quizzes		
Labs		
Final Exam	50	
TOTAL	100	

8 Recommended Materials to Assist Students to Succeed Throughout the Course

a) Texts –

Handbook of Steel Construction and CSA S16, 11th edition,
Canadian Institute of Steel Construction (required)

Concrete Design Handbook and CSA A23.3, 4th edition
Cement Association of Canada (optional)

b) Other –

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 Class Policies

- Late assignments will have 10% deducted. Assignments submitted after graded assignments have been returned are worth zero.
- You must pass the final exam (minimum of 50%) to pass the course.