



CAMOSUN COLLEGE
School of Trades and Technology
Department of Civil Engineering Technology

ENGR 262
Analytical Methods
Fall - 2019

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	Ross Gibbs
Office hours	Please see schedule posted outside office.
Office	TEC 265
Phone	Please use email Alternative: _____
E-mail	Gibbs@camosun.bc.ca
Website	See course Google Group.

2 Prerequisites and Co-requisites

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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>
3.0	14
2.0	14

Credits = 3

4 Short Description

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 structure, products of inertia and Mohr's circle for inertia. Topics may include force and displacement methods and fluid mechanics.

5 Intended Learning Outcomes

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.

6 Course Content and Schedule

See last page of this outline.

7 Recommended Materials to Assist Students to Succeed Throughout the Course

- a) See last page of this outline.

8 Basis of Student Assessment

<i>Component</i>	<i>Weighting %</i>	<i>Comments</i>
Assignments		
Mid-term Exam		
Quizzes		
Labs		
TOTAL	0	See last page of this outline.

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

- You must pass the final exam to pass the course
- Out of class course communication will be via a mailing list.

Week	Session	Lect (h)	Tut (h)	Eval	Chapter	Sections	Pages			totals
							from	to	count	
1	2-Sep									
	3-Sep		2		RISA					
	6-Sep	1.5			Admin + ASMD ¹ Frames					
2	9-Sep	1.5			ASMD Frames					
	10-Sep		2		TBA					
	13-Sep	1.5			Slope Defl (SD) ⁽¹⁾	1 - 3	524	555	32	
3	16-Sep	1.5			Slope Defl	4	555	563	9	
	17-Sep		2		Mathcad - Introduction					
	20-Sep	1.5			Slope Defl					
4	23-Sep	1.5			Slope Defl					
	24-Sep		2		Mathcad: Ten/Com/Shear I					
	27-Sep	1.5			Slope Defl					
5	30-Sep	1.5			Stiffness - Truss ⁽²⁾	1 - 3	48	67	20	
	1-Oct		2		Mathcad: Ten/Com/Shear II					
	4-Oct	1.5			Stiffness - Truss	5 - 8	76	122	47	
6	7-Oct	1.5			Stiffness - Truss					
	8-Oct		2		Mathcad - Axial					
	11-Oct	1.5			Stiffness - Truss					108
7	14-Oct									
	15-Oct		2	1.5	MT					
	18-Oct	1.5			Moment Dist ⁽³⁾	1 - 5	487	515	29	
8	21-Oct	1.5			Moment Dist					
	22-Oct		2		Mathcad: Torsion					
	25-Oct	1.5			Moment Dist					
9	28-Oct	1.5			Moment Dist					
	29-Oct		2		Mathcad: Stresses in Beams					
	1-Nov	1.5			Moment Dist					
10	4-Nov	1.5			Moment Dist					
	5-Nov		2		Mathcad: Stress Transformation					
	8-Nov	1.5			Moment Dist					
11	11-Nov									
	12-Nov		2		Stiffness - MATLAB					
	15-Nov	1.5			Moment Dist					
12	18-Nov	1.5			Moment Dist					
	19-Nov		2		TBA					
	22-Nov	1.5			Moment Dist					
13	25-Nov	1.5			Centroids and Moments of Inertia ⁽⁴⁾	1 - 6	955	970	16	
	26-Nov		2		ACAD + Influence Lines					
	29-Nov	1.5			Moments of Inertia	7 - 9	971	979	9	
14	2-Dec	1.5			Moments of Inertia					
	3-Dec		2	1	Lab Test + Q&A					
	6-Dec	1.5			Q&A					
Total (h)		37.5	28.0	2.5						54
		65.5							Total page count	162

Topic	Mark
Midterm	30
Final	60
Lab Test	10
	<u>100</u>

Out of class course communication will be via a Google mailing list.
 All students must subscribe at:

- + ASMD - Axial, Shear and Moment Diagram
- (1) Chapter 15 - Structural Analysis 2E, A Kassimali - beams, frames without sidesway
- (2) Chapter 3 - Matrix Analysis of Structures 1E, A Kassimali - trusses only
- (3) Chapter 12 - Structural Analysis 8E, RC Hibbeler - beams, frames without and with sidesway
- (4) Chapter 12 - Mechanics of Materials, 8E, B Goodno; JM Gere