



CAMOSUN COLLEGE
School of Arts & Science
Department of Mathematics & Statistics

MATH-250B-X01
Intermediate Calculus 2
Winter 2019

COURSE OUTLINE

1. Instructor Information

(a) Instructor	Gilles Cazelais
(b) Office hours	https://sites.google.com/site/cazelais/
(c) Location	CBA 158
(d) Phone	250-370-4495
(e) E-mail	Cazelais@camosun.bc.ca
(f) Website	https://sites.google.com/site/cazelais/home/math250b

2. Intended Learning Outcomes

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

1. Differentiate functions of many variables and use chain rules to differentiate composite functions.
2. Compute gradients and directional derivatives.
3. Solve constrained optimization problems using Lagrange multipliers.
4. Set up and evaluate multiple integrals to find areas, volumes, masses, centres of mass, and moments of inertia.
5. Change variables in multiple integrals to cylindrical, spherical, or general coordinates.
6. Compute the divergence and the curl of a vector field, and find the potential function for conservative fields.
7. Set up and evaluate line and surface integrals.
8. Use Green's theorem to evaluate line integrals.
9. Use Stokes' theorem and the divergence theorem to evaluate line and surface integrals.

3. Required Materials

Edwards and Penney, *Calculus Early Transcendentals*, 7th edition.

4. Course Content and Schedule

1. Partial Differentiation
 - Introduction (12.1)
 - Cylinders and Quadric Surfaces (11.7)
 - Functions of Several Variables (12.2)
 - Limits and Continuity (12.3)
 - Partial Derivatives (12.4)
 - Multivariable Optimization Problems (12.5)
 - Increments and Linear Approximations (12.6)
 - The Multivariable Chain Rule (12.7)

Directional Derivatives and the Gradient Vector (12.8)
Lagrange Multipliers and Constrained Optimization (12.9)
Critical Points of Functions of Two Variables (12.10)

2. Multiple Integrals

Double Integrals (13.1)
Double Integrals over more general regions (13.2)
Area and Volume by Double Integration (13.3)
Double Integrals in Polar Coordinates (13.4)
Applications of Double Integrals (13.5)
Triple Integrals (13.6)
Cylindrical and Spherical Coordinates (11.8)
Integration by Cylindrical and Spherical Coordinates (13.7)
Surface Area (13.8)
Change of Variables in Multiple Integrals (13.9)

3. Vector Calculus

Vector Fields (14.1)
Line Integrals (14.2)
The Fundamental Theorem and Independence of Path (14.3)
Green's Theorem (14.4)
Surface Integrals (14.5)
The Divergence Theorem (14.6)
Stokes' Theorem (14.7)

5. Basis of Student Assessment (Weighting)

- Three tests: 50%
- Comprehensive Final Exam: 50%

6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

8. 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.

A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at <http://camosun.ca/about/policies/index.html> for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.