



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

**MATH 250B-DX02**  
**Intermediate Calculus 2**  
**Fall 2020**

**COURSE OUTLINE**

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The course description is online @ <http://camosun.ca/learn/calendar/current/web/math.html>

*Ω 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.*

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**1. Instructor Information**

<b>(a) Instructor</b>	Leah Howard
<b>(b) Office hours</b>	Mondays 12:30-2:20 and Wednesdays 2:30-4:20
<b>(c) Location</b>	Online. The link will be emailed to students before each office hour.
<b>(d) Phone</b>	Use email instead <b>Alternative:</b>
<b>(e) E-mail</b>	HowardL@camosun.ca
<b>(f) Website</b>	www.leahhoward.com

Free math help is also available in the MATH LAB. Email Duncan at [mcdougald@camosun.ca](mailto:mcdougald@camosun.ca) to request an invitation. You can then access the Math Lab by signing into Microsoft Teams.

**Tips for Success:**

- 1) Watch lecture videos during each scheduled lecture to stay on track
- 2) Videos will be less than 50 minutes long, so you will have extra time to drop into office hours

**2. Intended Learning Outcomes**

*(If any changes are made to this part, then the Approved Course Description must also be changed and sent through the approval process.)*

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

\* Any scientific calculator

\* There is no required textbook. Suggested homework problems and answers will be provided for free on D2L.

\* An optional textbook is Calculus (11th Edition) by Larson and Edwards. This is the same text used for Math 250A.

### 4. Course Content

#### 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

Assignment 1	10% of final grade
Test 1	18% of final grade
Test 2	18% of final grade
Test 3	18% of final grade
Test 4	18% of final grade
Assignment 2	18% of final grade

You will have approximately 50 minutes to write each test. A thorough understanding of the course material will be required to complete the test during the time limit.

**Tests will take place during scheduled class time on Sept 30, Oct 14, Nov 4, Nov 25**  
**If you miss a test for any reason, you must write a make-up test.**

### ***Academic Integrity***

Academic dishonesty is NOT tolerated and the consequences can be severe.

Academic Integrity Guidelines for Assignments and Tests

You MAY use your own notes and any resources on the course website: notes, videos, formula sheet etc  
You may NOT copy from other people (including classmates, friends/family, tutors, homework sites like Chegg)

Possible disciplinary actions include:

\* You receive zero on the assignment or test

\* An Academic Infraction Report is added to your academic record.

## 6. Grading System

*(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)*

*(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)*

Standard Grading System (GPA)

Competency Based Grading System

## **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.

## 7. Recommended Materials to Assist Student Success Throughout the Term

### Tips for Success:

- 1) Watch lecture videos during each scheduled lecture to stay on track
- 2) Videos will be less than 50 minutes long, so you will also have time to attend office hours
- 3) Do your Suggested Homework Problems each time we finish a section
- 4) Use the Math Lab (instructions on first page of this document)

## 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.