



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

MATH-250B Sections X01 and X02
Intermediate Calculus 2
FALL 2019

COURSE OUTLINE

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

☐ 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

| | |
|------------------|--|
| (a) Instructor | LEAH HOWARD |
| (b) Office hours | Mon 11:30-1:20, Tues 12:30-1:20, Wed/Thurs/Fri 11:30-12:20 |
| (c) Location | CBA 151 |
| (d) Phone | 250-370-4490 Alternative: _____ |
| (e) E-mail | HowardL@camosun.ca |
| (f) Website | www.leahhoward.com |

FREE MATH HELP IS ALSO AVAILABLE IN THE MATH LAB, TEC 142.

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

A scientific calculator (non-programmable, non-graphing).

Download or print the coursepack containing the suggested homework problems and answers. The link will be provided in class. You can print the coursepack by taking a flash drive containing the file to the Satellite Printshop in the CBA Atrium.

Optional Text: ***Calculus: Early Transcendentals, Edwards & Penney, 7th Ed***

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

- 3 Tests (each worth approximately 17% of your final grade)
- Comprehensive Final Exam (worth 50% of your final grade)

Tentative Test Dates: Wed Oct 2, Wed Oct 30, Wed Nov 27

If you miss a test for any reason then your final exam will be worth 67% of your final grade.

The final exam will cover the entire course and will be 3 hours long. As stated in the current college calendar, “students are expected to write final examinations at the scheduled time and place.” Exceptions will only be considered due to **emergency** circumstances as outlined in the calendar. Holidays or scheduled flights are not considered to be emergencies.

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

7. 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>

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)

| 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. |