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

MATH-250B-X01, X02
Intermediate Calculus 2
Winter 2020

COURSE OUTLINE

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.*

1. Instructor Information

(a)	Instructor:	Raymond Lai				
(b)	Office Hours: (also by appointment)	Monday	Tuesday	Wednesday	Thursday	Friday
		Appt.	**11:30 – 1:20**	**12:30 – 1:20**	**11:30 – 12:20**	**Appt.**
(c)	Location:	CBA 152				
(d)	Phone:	250-370-4491				
(e)	Email:	lai@camosun.bc.ca				
(f)	Website:	https://sites.camosun.ca/raymondlai/				

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

   (a) Texts: None

   (b) Other: Non-graphing non-programmable scientific calculator

4. Course Content and Schedule

Chapter 1: Partial Differentiation ·
Section 1.1 [~ 10 hours]   Partial Derivatives of Functions of Several Variables and Critical
                                  Points of Functions of Two Variables
Section 1.2 [~ 1 hour]   The Multivariable Chain Rule
Section 1.3 [~ 1 hour]   Gradient Vector and Directional Derivatives
Section 1.4 [~ 3 hours]   Lagrange Multipliers and Constrained Optimization

Chapter 2: Multiple Integrals ·
Section 2.1 [~ 2 hours]   Area and Volume by Double Integration
Section 2.2 [~ 1 hour]   Mass, Centre of Mass, and Moment of Inertia by
                                    Double Integration
Section 2.3 [~ 3 hours]   Change of Variables in Double Integrals
Section 2.4 [~ 2 hours]   Triple Integrals in Rectangular Coordinates
Section 2.5 [~ 1 hour]   Change of Variables in Triple Integrals
Section 2.6 [~ 3 hours]   Triple Integrals in Cylindrical and Spherical Coordinates

Chapter 3: Vector Calculus ·
Section 3.1 [~ 1 hour]   Line Integrals
Section 3.2 [~ 2 hours]   Potential Function for Conservative Fields and
                                    The Fundamental Theorem of Line Integrals
Section 3.3 [~ 3 hours]   Surface Integrals
Section 3.4 [~ 1 hour]   Green's Theorem
Section 3.5 [~ 1 hour]   Divergence Theorem
Section 3.6 [~ 1 hour]   Stokes' Theorem

Lectures, Reviews, Help Sessions	Tests	Holidays and Reading Break	Total
47 hours	4 hours	5 hour	56 hours

5. <mark>Basis of Student Assessment (Weighting)</mark>

Your course grade will be determined by using the following method:

	Test 1	Test 2	Assignment
Date	**Jan 31 (Fri)**	**Feb 28 (Fri)**	**Due: Noon Apr 7 (Tues)**
Weight	40%	40%	20%

- Study the materials and examples in the packages. Do the indicated exercises in the packages; then either scan or take a photo (in high contrast and good lighting) of your handwritten solutions and submit them by email to lai@camosun.bc.ca before the due time (cc yourself your email as your proof of submission on time). You can scan using the multipurpose copying machines on campus.
- One question from each section will be selected for grading and they count for 50% of your grade; the completion of the remaining questions counts for the remaining 50%. Show all details of your work for full credits.
  There is a penalty of 20% per day for late submission – for instance, as the assignment is due at noon April 7 Tuesday, solution submitted one day late (between 12:01pm April 7 Tuesday and noon April 8 Wednesday) can earn at most 16% ($0.8 \times 20\%$), solution submitted two days late (between 12:01pm April 8 Wednesday and noon April 9 Thursday) can earn at most 12% ($0.6 \times 20\%$), and so on.
  Note: Different students may have different questions graded.
- Help is available via email: lai@camosun.bc.ca (between 9am and 4pm on weekdays). Questions and answers from other students will also be posted at our course site
  https://sites.camosun.ca/raymondlai/home-2/courses/math-250b/

6. Grading System

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

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

How to do well in the course and where to get help
1. Do not skip classes.
2. Start working on the exercises as soon as we finish a section.
3. It is important to understand the principles involved rather than to memorize a method of solution – try variations of questions.
4. Studying in groups is an efficient way to learn mathematics; however, make sure you can solve the problems yourself.
5. Extra help available from assistant at the Math Lab located at Technologies Centre (TEC) Room 142 (phone: 370-4492). This drop-in centre is freely available for your use to work on math homework and to seek help from the tutor on staff (see hours posted on the door).

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 **S T U D E N T S E R V I C E S** 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	*Incomplete*: 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	*In progress*: 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	*Compulsory Withdrawal*: 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.