



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

**MATH-220-001**  
**Multivariable Calculus**  
**Fall 2018**

**COURSE OUTLINE**

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

$\Omega$  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**

(a) Instructor	Dan Bergerud
(b) Office hours	11:30 – 12:30 each day
(c) Location	Ewing 264
(d) Phone	250-370-3495 (24 hr. voice mail) <b>Alternative:</b> _____
(e) E-mail	bergerud@camosun.bc.ca
(f) Website	_____

**2. Intended Learning Outcomes**

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

1. Solve three dimensional geometry problems involving points, lines, planes, vectors, vector projections, and distances.
2. Sketch, differentiate, and integrate vector-valued functions to find velocities, accelerations, tangents, and normals.
3. Differentiate functions of many variables and use chain rules to differentiate composite functions. Compute gradients, directional derivatives, and multivariable Taylor series.
4. Setup 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 or curl of a vector field, and find the potential function for conservative fields.
7. Setup and evaluate line and surface integrals.
8. Use Stokes theorem and the divergence theorem to evaluate line and surface integrals.

**3. Required Materials**

(a) Texts

Texts: Larson, Hostetler, and Edwards, *Multivariable Calculus*, 10th Edition, Houghton Mifflin, 2014.

#### 4. Course Content and Schedule

Chapter 11: Vectors and the Geometry of Space.	11.1 - 11.7
Chapter 12: Vector-Valued Functions.	12.1 - 12.5
Chapter 13: Functions of Several Variables.	13.1 - 13.10
Chapter 14: Multiple Integration.	14.1 - 14.8
Chapter 15: Vector Analysis.	15.1 - 15.8

#### 5. Basis of Student Assessment (Weighting)

- (a) Assignments 20%
- (b) Midterm 30%
- (c) 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.