

**CAMOSUN COLLEGE
MATHEMATICS DEPARTMENT
Class Outline**

MATH 250A Intermediate Calculus 1 for Engineers

Calendar Description

This course is restricted to students in the Engineering Bridge (UVic) program. Topics: techniques of integration, indeterminate forms, infinite series, parametric and polar coordinates, vectors and geometry of 3-space, vector functions and partial derivatives.

Course Information

Instructor: Dr. Peter J. Trushel
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Office hours: by appointment or posted

Organization

OFFERED: 4th Quarter
CREDIT: 3
IN-CLASS WORKLOAD: 5 hours lecture/week
OUT-OF-CLASS WORKLOAD: 6 hours/week
PREREQUISITES: Admission to the Engineering Bridging Program
COREQUISITES: Math 251 (formerly 130)

Objectives

To reinforce the Engineering Bridging Program students' understanding of intermediate calculus concepts, techniques and applications.

Text

Roland E. Larson, Robert P. Hostetler and Bruce H. Edwards, *Calculus*, 7th ed. Houghton Mifflin Company, 2002.

Evaluation

Assignments	10%
Two term tests:	40%
Comprehensive final exam:	50%

Percentage to Letter Grade Conversion

Percentage	Letter Grade
95 to 100	A+
90 to 94	A
85 to 89	A-
80 to 84	B+
75 to 79	B
70 to 74	B-
65 to 69	C+
60 to 64	C
50 to 59	D
below 50	F

OUTLINE**Background**

Text (week)	Hours	Topic
1.1 (1)	Read	A Preview of Calculus
1.2 (1)	1	Finding Limits Graphically and Numerically
1.3 (1)	1	Evaluating Limits Analytically
1.4 (1)	1	Continuity and One-Sided Limits
2.4 (2)	1	The Chain Rule
2.5 (2)	1	Implicit Differentiation
4.5 (2)	1	Integration by Substitution
Total hours	6	

Integration Techniques, L'Hopital's Rule, and Improper Integrals

Text (week)	Hours	Topic
7.1 (2)	1	Basic Integration Rules
7.2 (2)	1	Integration by Parts
7.3 (3)	2	Trigonometric Integrals
7.4 (3)	2	Trigonometric Substitution
7.5 (3, 4)	2	Partial Fractions
7.6 (4)	1	Integration by Table and Other Integration Techniques
7.7 (4)	2	Indeterminate Forms and L'Hopital's Rule
7.8 (4, 5)	2	Improper Integrals
Total hours	13	

Infinite Series

Text (week)	Hours	Topic
8.1 (5)	1	Sequences
8.2 (5)	2	Series and Convergence
8.3 (5)	1	The Integral Test and p -Series
8.4 (6)	1	Comparisons of Series
8.5 (6)	1	Alternating Series
8.6 (6)	1	The Ratio and Root Tests
8.7 (6)	1	Taylor Polynomials and Approximations
8.8 (6)	1	Power Series
8.9 (7)	1	Representation of Functions by Power Series
8.10 (7)	1	Taylor and Maclaurin Series
Total hours	11	

Conics, Parametric Equations, and Polar Coordinates

Text (week)	Hours	Topic
9.1	Read	Conics and Calculus
9.2 (7)	1	Plane Curves and Parametric Equations
9.3 (7)	2	Parametric Equations and Calculus
9.4 (8)	2	Polar Coordinates and Polar Graphs
9.5 (8)	2	Area and Arc Length in Polar Coordinates
9.6 (8, 9)	2	Polar Equations of Conics and Kepler's Law
Total hours	9	

OUTLINE (continued)**Vectors and Geometry of Space**

Text (week)	Hours	Topic
10.1 (9)	Read	Vectors in the Plane
10.2 (9)	Read	Space Coordinates and Vectors in Space
10.3 (9)	1	The Dot Product of Two Vectors
10.4 (9)	1	The Cross Product of Two Vectors in Space
10.5 (9)	2	Lines and Planes in Space
10.6 (10)	2	Surfaces in Space
10.7 (10)	2	Cylindrical and Spherical Coordinates
Total hours	8	

Vector-Valued Functions

Text (week)	Hours	Topic
11.1 (10)	1	Vector-Valued Functions
11.2 (11)	2	Differentiation and Integration of Vector-Valued Functions
11.3 (11)	1	Velocity and Acceleration
11.4 (11)	1	Tangent Vectors and Normal Vectors
11.5 (11)	1	Arc length and Curvature
Total hours	6	

Lecture	53 hours
Holidays	2 hours
Total	55 hours