



**School of Arts & Science
MATHEMATICS DEPARTMENT**

**MATH 109 - 003
Applied Calculus
2010W**

COURSE OUTLINE

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

Ω Please note: the College electronically stores this outline for five (5) years only.
It is **strongly recommended** you keep a copy of this outline with your academic records.
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

1. Instructor Information

(a)	Instructor:	Alan Meichsner		
(b)	Office Hours:	Monday-Friday 11:30-12:20am		
(c)	Location:	Ewing 250		
(d)	Phone:	250-370-3321	Alternative Phone:	
(e)	Email:	meichsnera@camosun.ca		

2. Intended Learning Outcomes

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

1. Solve linear system problems using the Gauss-Jordan Elimination Method and the Inverse Matrix Method.
2. Use the Simplex Method to solve linear programming problems, including those with mixed constraints.
3. Solve basic counting problems using permutations and combinations.
4. Perform calculations that apply the basic properties and concepts of probability, including Bayes' Rule and Markov Chains.
5. Compute and interpret descriptive statistics.
6. Perform computations using the normal and binomial distributions.
7. Determine the validity of arguments by using truth tables and by using the basic laws of logic.
8. Derive simple annuity formulas and apply them to solve amortization problems.

3. Required Materials

Textbook: Finite Mathematics by Howard L Rolf.
Sixth or Seventh Edition.

4. Course Content and Schedule

CHAPTER 1: FUNCTIONS AND LINES

#	Text	Time	
1	1.1, 1.2	1	Functions, Graphs and Lines
2	1.3	1	Mathematical Models and Applications of

Linear Functions

CHAPTER 2: LINEAR SYSTEMS

#	Text	Time	
3	2.1	1.5	Systems of Two Equations
4	2.2	1.5	Systems with Three Variables; Matrix Representations of Linear Systems
5	2.3	4	Gauss-Jordan Method for General Systems
6	2.4	.5	Matrix Operations
7	2.5	.5	Multiplication of Matrices
8	2.6	2	The Inverse of a Matrix
9	2.7	1	The Leontief Input-Output Model
		1	TEST 1, Lessons 1 to 9

CHAPTER 3: LINEAR PROGRAMMING

#	Text	Time	
10	3.1	.5	Linear Inequalities in Two Variables
11	3.2	.5	Solutions of Systems of Inequalities: A Geometric Picture
12	3.3	1	Linear Programming: A Geometric Approach

CHAPTER 4: LINEAR PROGRAMMING: THE SIMPLEX METHOD

#	Text	Time	
13	4.1	1	Setting Up the Simplex Method
14	4.2	2	The Simplex Method
15	4.4	1	Mixed Constraints
16	4.5	1	Multiple Solutions, Unbounded Solutions, and No Solutions

CHAPTER 6: SETS AND COUNTING

#	Text	Time	
17	6.1	.5	Sets
18	6.2	.5	Counting Elements in a Subset Using a Venn Diagram
19	6.3	2	Basic Counting Principles
20	6.4	1	Permutations
21	6.5	1	Combinations
22	6.6	1	A Mixture of Counting Problems
		1	TEST 2, Lessons 10 to 22

CHAPTER 7 + Section 8.6: PROBABILITY

#	Text	Time	
23	7.1	1	Introduction to Probability
24	7.2	1	Equally Likely Events
25	7.3	1	Compound Events: Union, Intersection and Complement
26	7.4	2	Conditional Probability
27	7.5	1	Independent Events
28	7.6	1	Bayes' Rule
29	8.6	1	Binomial Distribution
30	7.7	2	Markov Chains

CHAPTER 10: LOGIC

#	Text	Time	
31	10.1	1	Statements

32	10.2	1	Conditional Statements
33	10.3	1	Equivalent Statements
34	10.4	1	Valid Arguments
		1	TEST 3, Lessons 23 to 34

CHAPTER 8: STATISTICS

#	Text	Time	
35	8.1	1	Frequency Distributions
36	8.2	1	Measures of Central Tendency
37	8.3	2	Dispersion: Range, Variance & Standard Deviation
38	8.4	1	Random Variables and Probability Distributions
of			
			Discrete Random Variables
39	8.5	1	Expected Value
40	8.7	1	Normal Distribution
41	8.7	1	Using the Normal Distribution to Approximate the Binomial Distribution
			ASSIGNMENT

CHAPTER 5: MATHEMATICS OF FINANCE

#	Text	Time	
42	5.2	1	Compound Interest
43	5.3, 5.4	2	Annuities
		1	TEST 4, Lessons 35 to 43

Final exam, Lessons 1 to 43

5. Basis of Student Assessment (Weighting)

(a)	Other (eg. Attendance, Project, Group Work)	See below
(b)	Assignments	See below
(c)	Term tests	50%. Will throw out worse test if class participation and assignments are satisfactory
(d)	Final exam	50%. or 100% if higher than term mark

1. **TERM MARK.** You will be doing a number of assignments. These can be done in consultation with other students in your class, but with the help of nobody else. They will be overdue if not handed in at the beginning of the class on the due date, but can be handed in up to one day late with only a one mark deduction.

The term mark is the average of the scores on your in-class tests. However, if the average of your assignment scores is at least 70% and your in-class participation is satisfactory, I will throw out your worst test before I calculate the average.

If you miss an in-class test for ANY reason, you will get a zero. There will be no make-ups. But with decent assignment scores and class participation, that zero will be tossed out.

3. **MARK FOR THE COURSE.** Your course mark is the larger of:
 - a) The average of your term percentage and your final exam percentage
 - b) Your final exam percentage

6. Grading System

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	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

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 camosun.ca or 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.

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 E-1.5 at camosun.ca for information on conversion to final grades, and for additional information on student record and transcript notations.

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

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services or the College web site at camosun.ca.

STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services and on the College web site in the Policy Section.