



MATH-109-004
Finite Mathematics
Fall 2018

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

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|------------------|----------------------------------------------------------------|
| (a) Instructor | Amanda Malloch |
| (b) Office hours | Mon/Wed 1:00-2:00 and Tues/Thus 11:00-12:00, or by appointment |
| (c) Location | Ewing 342A |
| (d) Phone | 250-370-3303 Alternative: _____ |
| (e) E-mail | MallochA@camosun.bc.ca |
| (f) Website | D2L available through www.camosun.ca |

2. Intended Learning Outcomes

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

1. Solve counting problems using sets and/or the multiplication principle, and recognize and solve problems involving permutations and combinations.
2. Apply the basic properties and concepts of probability to solve problems from fields such as medicine and quality control. Determine the probability distributions for random variables and calculate expected values. Where appropriate, evaluate probabilities using the binomial distribution. Explore systems evolving from one state to another using Markov chains.
3. Solve linear systems of equations using techniques, including Gauss-Jordan elimination and inverse matrices.
4. Solve linear programming problems using a graphical approach.
5. Derive simple annuity formulas and use them to solve amortization problems.
6. Translate statements into symbolic form and vice versa. Construct truth tables for propositions, including implications. Use truth tables to verify equivalencies.

3. Required Materials

- (a) Text: *Finite Mathematics*, Custom Edition for Camosun College. The second custom edition has a turquoise cover, while the first custom edition (which is potentially usable) had a green cover. Please ask if you have any questions.
- (b) Calculator: As per department policy, the only calculator permitted for use on tests and the final exam is the Sharp EL-531 (or EL-510R) scientific calculator. No other make/model of calculator is permitted, nor are other electronic devices such as cell phones, iPods, electronic translators, etc

4. Course Content

1. Linear Equations and Straight Lines

- 1.1: Coordinate Systems and Graphs
- 1.2: Linear Inequalities
- 1.3: The Intersection Point of a Pair of Lines
- 1.4: The Slope of a Straight Line

2. Linear Programming, A Geometric Approach

- 2.1: A Linear Programming Problem
- 2.2: Fundamental Theorem of Linear Programming
- 2.3: Linear Programming

3. Sets and Counting

- 3.1: Sets
- 3.2: A Fundamental Principle of Counting
- 3.3: Venn Diagrams and Counting
- 3.4: The Multiplication Principle
- 3.5: Permutations and Combinations
- 3.6: Further Counting Techniques

4. Probability

- 4.1: Experiments, Outcomes, Sample Spaces, and Events
- 4.2: Assignment of Probabilities
- 4.3: Calculating Probabilities of Events
- 4.4: Conditional Probability and Independence
- 4.5: Tree Diagrams
- 4.6: Bayes' Theorem, Natural Frequencies

5. Random Variables

- 5.1: Random Variable, Probability Distribution, and Expected Value
- 5.2: Bernoulli Trials and Binomial Distribution

6. Matrices

- 6.1: Systems of Linear Equations with Unique Solutions
- 6.2: General Systems of Linear Equations
- 6.3: Arithmetic Operations on Matrices
- 6.4: The Inverse of a Matrix
- 6.5: The Gauss-Jordan Method for Calculating Inverses

7. Markov Chains

- 7.1: Properties of Markov Chains
- 7.2: Regular Markov Chains

8. Mathematics of Finance

- 8.1: Simple Interest
- 8.2: Compound and Continuous Compound Interest
- 8.3: Future Value of an Annuity; Sinking Funds
- 8.4: Present Value of an Annuity; Amortization

9. Logic

- 9.1: Introduction to Logic
- 9.2: Truth Tables
- 9.3: Implications
- 9.4: Logical Implication and Equivalence

5. Basis of Student Assessment (Weighting)

- (a) In-Class Assignments 14%
We will have regular (approximately weekly) short in-class assignments. Many of the questions used will be taken directly from online homework (WebWork) and/or suggested exercises from the textbook that will be available for you to do as practice.
- (b) Tests 36% (12% each)
Tentatively scheduled for:
Thursday, October 11th
Thursday, November 8th
Thursday, November 29th
- (c) Exam 50%
The final exam is scheduled by Camosun College and will occur sometime between December 10th and December 18th.

6. Grading System

- 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>

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. |

9. Important Dates

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|------------------|-------------------------------------------|
| Sept 4th: | First day of class |
| Sept 18th: | Add/Drop date and Fee deadline |
| Oct 8th: | Thanksgiving Day (no class) |
| Nov 7th: | Last day to drop without academic penalty |
| Nov 12th: | Remembrance Day (no class) |
| Dec 7th: | Last day of class |
| Dec 10th – 18th: | Exam Period |