		School of Arts & Science **Department of Mathematics & Statistics** **MATH 109-003** **Finite Mathematics** **Fall 2017**

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:	Josh Manzer
(b)	Office Hours:	Schedule posted on D2L, or by appointment
(c)	Location:	CBA 151
(d)	Phone:	250-370-4490
(e)	Email:	ManzerJ@camosun.bc.ca
(f)	Website:	D2L (http://online.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

* Textbook: *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.

* Non-graphing, non-programmable calculator (preferably Sharp EL-531XG). No other electronic devices, including cell phones, iPods, electronic translators, etc. are permitted.

* WeBWork: Some take-home assignments will be completed using WeBWork, an online homework system for delivering individualized homework problems over the web. It will give you instant feedback as to whether or not your answers are correct. When these assignments are available, you will be able to access them at

   https://webworklans2.camosun.ca/webwork2/Math109-Fall2017-Manzer

4. **Course Content and Schedule**

   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: Bernouilli 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 (10%)

You are expected to participate in short assignments during class throughout the term, which will be submitted for marks.

(b) Take-home Assignments (10%)

There will be assignments to complete outside of class. Some will be completed using WeBWork, while others are to be completed by hand and submitted at the beginning of class on the day they are due.

(c) Tests (30%)

There will be 3 tests written in class, tentatively scheduled for October 5th, October 26th, and November 28th.

(d) Final Exam (50%)

The final exam will be 3 hours long and cover material from the entire course. It will be scheduled by the College during the final exam period, December 11th – 19th. **You must write the final exam at the scheduled time as per Camosun College's policy on final examinations.** See camosun.ca/learn/calendar/current/pdf/academic-policies.pdf.

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 E-1.5 at **camosun.ca** 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, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. *(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)*
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.

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 the College web site in the Policy Section.

Math Lab:

You can get **free face-to-face tutoring** from the instructional assistants in the drop-in help centre, TEC 142. The hours are posted on the door and on the Math Department page http://camosun.ca/learn/programs/math/. The room is also available for you to study and work on math homework.

Important Dates:

Sept 5th: First day of class

Sept 19th: Fee deadline

Oct 9th: Thanksgiving holiday (no class)

Nov 7th: Last day to with withdraw without failing grade

Nov 13th: College closed for Remembrance Day weekend (no class)

Dec 8th: Last day of class

Dec 11th – 19th: Exam Period