Camosun College — Department of Mathematics

MATH 109 (Finite Mathematics), Section 003, 2009 Winter Term — Course Outline[†]

Instructor : Dr Werner Gründlingh
Office : Ewing Building, Room 270
Phone : +1-250-370-3111
email : grundlinghw@camosun.bc.ca
Lecture Hours : **Tu**esday & **Th**ursday 17h30 to 19h50 in Young Building, Room 227 (Lansdowne Campus)
Office Hours : By appointment
Web Page : https://sites.google.com/site/ccmath109/

Textbook : The following source will be utilised during this course:

- HL Rolf, *Finite Mathematics*, 6$^{\text{th}}$ or 7$^{\text{th}}$ Edition, Thomson Brooks/Cole, Canada

Math Assistance : If you need assistance, you are encouraged to go to *The Mathlab* in Ewing 224 (hours of operation are posted on location, or on the Department of Mathematics web page, available online from http://camosun.ca/learn/programs/math/labs_224.html). This is a *free* service. The lab is great place to go when you are confident with the subject matter in general but require a little push in the right direction. If you do not feel comfortable and/or still have problems after pursuing this avenue, you may contact me.

Additionally, I support finding one or more people in your class who you feel comfortable studying with. For many people, learning mathematics in a social setting with their peers may be very rewarding and productive.

Calculators : The department has adopted a standard calculator: the **Sharp EL-531W**. This is the **only** calculator that will be permitted for use in any course offered by the department. This policy is followed for reasons of consistency, as well as setting a fair and even standard for all students.

Homework : A handout will be distributed at the beginning of the term. This handout contains 43 sets of homework assignments. These will be assigned roughly at the rate of one set per section covered throughout the term. These problems are for practice only and should *not* be submitted for marking. Answers to odd-numbered exercises may be found in the back of the textbook. Since many of the midterm test questions will be based on the problems contained in the homework, assignments and on examples worked in class, students are advised to keep an organised notebook of all assigned exercises and examples worked in class. If up to date, a typical student will need to maintain a 1 : 1 ratio between lecturing and preparation/study. That is, for every 60 minutes of lecturing, an additional 60 minutes should be spend going over the content covered during the lecture.

Assessments : From term to term there are portions of the course that students struggle with. Consequently, **assignments** are instituted to give students some feedback on their progress through the term and will consist of approximately 4 to 6 questions of difficulty similar to the more challenging practice problems. Additionally, each assignment *should* be submitted for marking and may influence your term mark in this course (see *Evaluation* below). They will be assigned throughout the course as the relevant material has been covered. Following each assignment, there will be an in-class **test** that covers the same material as in the assignments. As a rough guideline to which topics will be covered in these assessments, the following table will be used:

[†]It is possible, but unlikely, that unforeseen circumstances may cause me to alter some of the information in the document. I will announce any such alterations in class. If you miss any announcement because of inattention or absence from class, then you must accept the consequences of missing it.

Assessments	Coverage
#1	*Functions, lines and linear systems* (Chapters 1 and 2)
#2	*Linear programming, sets and counting* (Chapters 3, 4 and 6)
#3	*Probability and logic* (Chapters 7, 8.6 and 10)
#4	*Statistics and finance* (Chapters 8 and 5)

There will also be a comprehensive **final examination** at the end of the term during the final examination period. This examination will cover *all* of the topics included in this course, in the same format as the tests and will be 3 hours long.

Evaluation : The assessments, due dates and their respective weights throughout the term are:

Assessment	Date	Weight
Assignment #1	Thursday, January 22nd, 2009	$8\frac{1}{3}\%$
Test #1	Tuesday, January 27th, 2009	$16\frac{2}{3}\%$
Assignment #2	Tuesday, February 17th, 2009	$8\frac{1}{3}\%$
Test #2	Tuesday, February 24th, 2009	$16\frac{2}{3}\%$
Assignment #3	Tuesday, March 17th, 2009	$8\frac{1}{3}\%$
Test #3	Thursday, March 19th, 2009	$16\frac{2}{3}\%$
Assignment #4	Tuesday, April 7th, 2009	$8\frac{1}{3}\%$
Test #4	Thursday, April 9th, 2009	$16\frac{2}{3}\%$
	and/or	
Final examination	To be announced	100%

Late assignments will be accepted with a penalty — a lowered maximum score of 50% per calendar day. That is, if an assignment is due on Tuesday, but handed it on Wednesday, the maximum score you may obtain is 50%. After Wednesday, your score for the assignment will be 0%. This is to allow solutions to be posted as soon as possible. Electronic submissions via email are acceptable.

The homework exercises are typical of the kinds of questions to be expected in tests. All tests will have the same format: part multiple choice and part full-answer.

Once marked, assignments/tests will be returned in class, or may be claimed during office hours. There will be no make-up tests. If you miss a test, you should notify me as soon as possible (within 7 calendar days of the day of the test) and provide the relevant supporting documentation. In such cases, your final examination score will be used to assign to you a score on the missed test that puts you in the same rank with your section as your rank on the final examination. That is, if you are ranked (say) 20th on the final examination, then you will receive a mark equivalent to the person ranked 20th on your missed assessment. You may miss no more than two of the four tests under this regulation. Students are *strongly* advised *not* to make final plans for travel or employment during the final examination period since special arrangements will *not* be made for examinations that may conflict with such plans. If you have a question or concern about your mark on a test, you must bring it to my attention within 7 calendar days of the date when it was returned in class. The date for the final cumulative examination will be made available in February 2009.

In an attempt to preserve consistency in course deliverance, the Department of Mathematics reserves the right to raise your course mark if it is judged that your in-class tests and final examination were more difficult than those in other years or other sections.

Course mark : Your course mark will be the *larger* of

- the average of your **term mark** and **final examination** percentage; or
- your **final examination** percentage.

Course letter grade and posting : The usual conversion of term marks and final examination percentage to letter grade is:

Letter grade	A$^+$	A	A$^-$	B$^+$	B	B$^-$	C$^+$	C	D	F
Percentage bounds (%)	90–100	85–89	80–84	77–79	73–76	70–72	65–69	60–64	50–59	0–49

Course grades will be posted by student number. If you wish to be excluded from this posting, notify me in advance via email.

Important dates : The following dates are scheduled in accordance with the Camosun College academic calendar.

Date	Information
January 5$^{\text{th}}$, 2009	Most *Winter 2009* credit programs/courses commence
January 19$^{\text{th}}$, 2009	Students who wish to withdraw must drop on/before this date or will be required to pay remaining fees
February 19$^{\text{th}}$–20$^{\text{th}}$, 2009	*Reading break*
February 20$^{\text{th}}$, 2009	*College Connections Day*
March 9$^{\text{th}}$, 2009	Last day to withdraw from most *Winter 2009* courses without a failing grade, or change to audit
April 10$^{\text{th}}$, 2009	*Good Friday*
April 13$^{\text{th}}$, 2009	*Easter Monday*
April 14$^{\text{th}}$–18$^{\text{th}}$, 20$^{\text{th}}$–22$^{\text{nd}}$, 2009	Final examination period

Lecture/tutorial schedule : The following lecture/tutorial schedule is proposed for Math 109 003. We may stick to this schedule, but also deviate from it slightly, depending on the circumstances:

Session	Date		Topic	Coverage
				— CHAPTER 1: FUNCTIONS AND LINES —
1	Tue,	Jan 6	1	1.1 Functions
			1	1.2 Graphs and Lines
			2	1.3 Mathematical Models and Applications of Linear Functions
				— CHAPTER 2: LINEAR SYSTEMS —
2	Thu,	Jan 8	3	2.1 Systems of Two Variables
			4	2.2 Systems with Three Variables: An Introduction to a Matrix Representation of a Linear System of Equations
3	Tue,	Jan 13	5	2.3 Gauss-Jordan Method for General Systems of Equations
4	Thu,	Jan 15	5	2.3 Gauss-Jordan Method for General Systems of Equations
			6	2.4 Matrix Operations
			7	2.5 Multiplication of Matrices
5	Tue,	Jan 20	8	2.6 The Inverse of a Matrix
6	Thu,	Jan 22	9	2.7 Leontief Input-Output Model in Economics
				TUTORIAL
	Tue,	Jan 27		**TEST #1**

Session	Date		Topic	Coverage
				— CHAPTER 3: LINEAR PROGRAMMING —
7	Thu,	Jan 29	10	3.1 Linear Inequalities in Two Variables
			11	3.2 Solutions of Systems of Inequalities: A Geometric Picture
			12	3.3 Linear Programming: A Geometric Approach
				— CHAPTER 4: LINEAR PROGRAMMING: THE SIMPLEX METHOD —
8	Tue,	Feb 3	13	4.1 Setting Up the Simplex Method
			14	4.2 The Simplex Method
9	Thu,	Feb 5	15	4.4 Mixed Constraints
			16	4.5 Multiple Solutions, Unbounded Solutions, and No Solutions
				— CHAPTER 6: SETS AND COUNTING —
10	Tue,	Feb 10	17	6.1 Sets
			18	6.2 Counting Elements in a Subset Using a Venn Diagram
			19	6.3 Basic Counting Principles
11	Thu,	Feb 12	19	6.3 Basic Counting Principles
			20	6.4 Permutations
12	Tue,	Feb 17	20	6.4 Permutations
			21	6.5 Combinations
			22	6.6 A Mixture of Counting Problems
				TUTORIAL
	Tue,	Feb 24		**TEST #2**

Session	Date		Topic	Coverage	
			— CHAPTER 7 + SECTION 8.6: PROBABILITY —		
13	Thu,	Feb 26	23	7.1	Introduction to Probability
			24	7.2	Equally Likely Events
			25	7.3	Compound Events: Union, Intersection, and Complement
14	Tue,	Mar 3	26	7.4	Conditional Probability
			27	7.5	Independent Events
15	Thu,	Mar 5	27	7.5	Independent Events
			28	7.6	Bayes' Rule
			29	8.6	Bernoulli Experiments and Binomial Distribution
16	Tue,	Mar 10	30	7.7	Markov Chains
			— CHAPTER 10: LOGIC —		
17	Tue,	Mar 10	31	10.1	Statements
18	Thu,	Mar 12	32	10.2	Conditional Statements
			33	10.3	Equivalent Statements
			34	10.4	Valid Arguments
19	Tue,	Mar 17	34	10.4	Valid Arguments
					TUTORIAL
	Thu,	Mar 19			**TEST #3**

Session	Date		Topic	Coverage	
			— CHAPTER 8: STATISTICS —		
20	Tue,	Mar 24	35	8.1	Frequency Distributions
			36	8.2	Measures of Central Tendency
			37	8.3	Measures of Dispersion: Range, Variance, and Standard Deviation
21	Thu,	Mar 26	37	8.3	Measure of Dispersion: Range, Variance, and Standard Deviation
			38	8.4	Random Variables and Probability Distributions of Discrete Random Variables
22	Tue,	Mar 31	39	8.5	Expected Value of a Random Variable
			40	8.7	Normal Distribution
			41	8.7	Using the Normal Distribution to Approximate the Binomial Distribution
			— CHAPTER 5: MATHEMATICS OF FINANCE —		
23	Thu,	Apr 2	41	8.7	Using the Normal Distribution to Approximate the Binomial Distribution
			42	5.2	Compound Interest
24	Tue,	Apr 7	43	5.3	Annuities and Sinking Funds
			43	5.4	Present Value of an Annuity and Amortization
					TUTORIAL
	Thu,	Apr 9			**TEST #4**