



**School of Arts & Science**  
**MATHEMATICS DEPARTMENT**  
**MATH 112 – Sections 1 and 2**  
**Fundamentals of Mathematics 1**  
**2008F**

## COURSE OUTLINE

**Prerequisite:** Math 11 or assessment

### Course Description

Designed for the prospective elementary school teacher. Topics include: symbolic logic, sets, combinatorics, probability, descriptive statistics, the binomial and normal distributions, number patterns (prime numbers, magic squares, golden ratios, etc.), geometric exploration of curves (conics, curves of constant width, roulettes, fractals) and recreational topology. (T)

### 1. Instructor Information

(a)	Instructor:	Jill Britton		
(b)	Office Hours:	Daily 9:30-10:20; M and W 11:30-2:20		
(c)	Location:	E246		
(d)	Phone:	250-370-3471	Alternative Phone:	250-652-5316
(e)	Email:	<a href="mailto:jbritton@camosun.bc.ca">jbritton@camosun.bc.ca</a>		
(f)	Website:	<a href="http://britton.disted.camosun.bc.ca">http://britton.disted.camosun.bc.ca</a>		

### 2. Intended Learning Outcomes

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

1. Use truth tables to establish the equivalence of compound propositions and to examine the validity of arguments.
2. Use Venn diagrams to solve counting and probability problems.
3. Use permutations and combinations to solve counting and probability problems.
4. Solve probability problems involving independent events.
5. Use tree diagrams to solve probability problems involving events that are not independent with a visual extension to Bayes' rule.
6. Perform calculations involving Binomial and Normal distributions.
7. Approximate Binomial distribution questions using an appropriate Normal distribution.
8. Research math topics suitable to the elementary classroom and present results in portfolio form. (Examples of such topics would be: prime numbers, magic squares, golden ratio, Fibonacci sequence, binary numbers, Pascal's triangle, the conics, line designs, Moire patterns, curves of constant width, roulettes, fractals, and recreational topology.)

### 3. Required Materials

- (a) Texts: Finite Mathematics, 8<sup>th</sup> Edition (S.T. Tan)
- (b) Other: Supplementary Material to Accompany Finite Mathematics, 8<sup>th</sup> Edition (Jill Britton)
- (c) Materials fee for **FUN WITH PATTERNS** (\$40) – materials include manual

### 4. Course Content and Schedule

M	Sept 1	<b>LABOUR DAY (College Closed)</b>
T	Sept 2	General Introduction
W	Sept 3	<b>SYMBOLIC LOGIC</b> A1 (Propositions and Connectives)
H	Sept 4	A2 (Truth Tables)
F	Sept 5	A2 / A3 (The Conditional and Biconditional Connective)
M	Sept 8	A3
T	Sept 9	A4 (Laws of Logic)
W	Sept 10	A4
H	Sept 11	A5 (Arguments)
F	Sept 12	A5 / Using Valid Argument Forms
M	Sept 15	Using Valid Argument Forms <b>SETS AND COUNTING</b> / 6.1 (Sets and Set Operations)
T	Sept 16	6.1
W	Sept 17	6.1 / 6.2 (The Number of Elements in a Finite Set)
H	Sept 18	6.2
F	Sept 19	6.2 / 6.3 (The Multiplication Principle)
M	Sept 22	<b>TEST 1</b> [ Symbolic Logic, 6.1 ]
T	Sept 23	6.3
W	Sept 24	6.3 / 6.4 (Permutations and Combinations)
H	Sept 25	6.4
F	Sept 26	6.4
M	Sept 29	6.4
T	Sept 30	6.4
W	Oct 1	6.4
H	Oct 2	Chapter 6 Review / Introduction to <b>FUN WITH PATTERNS</b>
F	Oct 3	Sieve of Eratosthenes / Magic Squares
M	Oct 6	<b>TEST 2</b> [ 6.2 - 6.4 ]
T	Oct 7	Clock (Mod) Arithmetic
W	Oct 8	Golden Ratio
H	Oct 9	Fibonacci Sequence
F	Oct 10	Binary Sequence / Pascal's Triangle
M	Oct 13	<b>THANKSGIVING (College Closed)</b>
T	Oct 14	Patterns in Pascal's Triangle
W	Oct 15	The Conics
H	Oct 16	The Conics / Moire Patterns
F	Oct 17	Line Designs / Curve Stitching

M	Oct 20	Curves of Constant Width
T	Oct 21	Cycloids
W	Oct 22	Fractals
H	Oct 23	<b>PROBABILITY</b>
		7.1 (Experiments, Sample Spaces and Events)
F	Oct 24	7.2 (Definition of Probability)
M	Oct 27	7.3 (Rules of Probability)
T	Oct 28	7.3 / 7.4 (Use of Counting Techniques in Probability)
W	Oct 29	7.4
H	Oct 30	7.4 / 7.5 (Conditional Probability and Independent Events)
F	Oct 31	7.5
M	Nov 3	7.5
T	Nov 4	7.5
W	Nov 5	7.5
H	Nov 6	Chapter 7 Review
F	Nov 7	<b>PROBABILITY DISTRIBUTIONS AND STATISTICS</b>
		8.1 (Distributions of Random Variables)
M	Nov 10	<b>TEST 3 [ 7.1 - 7.5 (to Tree Diagrams) ]</b>
T	Nov 11	<b>REMEMBRANCE DAY (College Closed)</b>
W	Nov 12	8.2 (Expected Value)
H	Nov 13	8.3 (Variance and Standard Deviation)
F	Nov 14	8.3 / 8.4 (The Binomial Distribution)
M	Nov 17	<b>TEST 4 [ Tree Diagrams, 8.1 - 8.3 ]</b>
T	Nov 18	8.4
W	Nov 19	8.4 / 8.5 (The Normal Distribution)
H	Nov 20	8.5
F	Nov 21	8.5 / 8.6 (Applications of the Normal Distribution)
M	Nov 24	8.6
T	Nov 25	8.6
W	Nov 26	Chapter 8 Review / Final Exam Outline
H	Nov 27	<b>MORE FUN WITH PATTERNS</b>
		Topological Equivalence
F	Nov 28	<b>TEST 5 [ 8.4 - 8.6 ]</b>
M	Dec 1	Final Examination Discussion
T	Dec 2	Jordan Curves / Mazes / Networks / Map Coloring
W	Dec 3	Math-e-Magic / Moebius Bands
H	Dec 4	Flexagons
F	Dec 5	Math Videos ( <i>Donald in Mathmagic Land, Mathematics Peepshow</i> )

## 5. Basis of Student Assessment (Weighting)

- (a) 5 Class Tests (37.5%)
- (b) Final Examination (37.5%)
- (c) Portfolio and Attendance (25%)

## 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](http://camosun.ca) 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, 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 3 <sup>rd</sup> course attempt or at the point of course completion.)
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.

**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](http://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.

Attendance is compulsory in the FUN WITH PATTERNS portion of the course (Objective 8).