CAMOSUN COLLEGE	***School of Arts & Science*** ***MATHEMATICS DEPARTMENT*** **MATH 112** **Math Fundamentals I** **2015 FALL**

COURSE OUTLINE

Calendar Description: *Designed for the prospective elementary school teacher.* Topics include: mathematical ways of thinking, problem solving, symbolic logic, elementary set theory and Venn diagrams, counting problems involving permutations and combinations, probability, descriptive statistics, the binomial and normal distributions, number patterns (prime numbers, golden ratio, etc.), exploration of curves (conics, fractals, etc.).

Prerequisites: "C" in Principles of Math 11, or Pre-calculus 11, or Foundations of Math 11, or Applications of Math 12, or MATH 073, or MATH 137; **or** "C+" in either MATH 135 or MATH 072; **or** assessment

To find where this course transfers, check the *BC Transfer Guide*

1. Instructor Information

Instructor:	Stephen Benecke
Office:	E254
Phone:	
Email:	stephen.benecke@gmail.com
Webpage:	http://stephen.ministryofconstructions.com/math/
Office Hours:	MTWRF 10:30 – 12:00

Exit Grade: A grade of at least **C** (60%) is required for entry into most university education programs.

2. Intended Learning Outcomes:

1. Differentiate between inductive and deductive approaches to problem solving.
2. Identify and use classic problem solving strategies.
3. Use truth tables to establish the equivalence of compound propositions and to examine the validity of arguments.
4. Use Venn diagrams to solve counting and probability problems.
5. Use the multiplication principle to solve counting and probability problems.
6. Use permutations and combinations to solve counting and probability problems.
7. Solve probability problems involving independent events.
8. Use tree diagrams to solve probability problems involving events that are not independent with a visual extension to Bayes' rule.
9. Compute and interpret descriptive statistics.
10. Perform calculations involving binomial and normal distributions.
11. Solve binomial distribution questions using an appropriate normal distribution.
12. Research topics suitable to the elementary classroom.

3. Required Material:
   (1) Textbook: *Reconceptualizing Mathematics for Elementary School Teachers* by Judith Sowder, Larry Sowder, and Susan Nickerson. Freeman, 2014.
   (2) Supplimental: *Investigating Patterns* by Jill Britton. (Purchase card at bookstore)

Note: Although the bookstore sells the package "text book + solutions manual", only the textbook alone is required for this course.

4. Course Content: Chapters
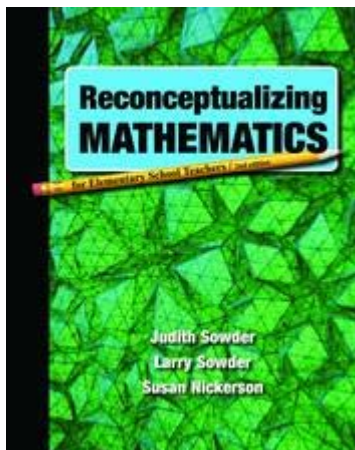
1. Reasoning About Quantities
2. Numeration Systems
3. Understanding Whole Number Operations
4. Some Conventional Ways of Computing
5. Using Numbers in Sensible Ways
6. Meaning for Fractions
7. Computing with Fractions
8. Multiplicative Comparisons and Multiplicative Reasoning
9. Ratios, Rates, Proportions, and Percents
10. Integers and Other Number Systems
11. Number Theory
12. What's Algebra
27. Quantifying Uncertainty
28. Determining More Complicated Probabilities
33. Special Topics in Probability

5. **Basis of Student Assessment (Weighting)**

(a) Assignments: 12%
(b) Term Tests: 19% each
(c) Final Examination: 50%
The final exam will cover the entire course and will be 3 hours long

All tests must be written during the scheduled times. In the event that you missed a test due to family emergency or illness, the weight of the test will be put on the final exam *if* the instructor is notified *before* the event. <u>NO</u> late assignments will be accepted for credit. Final examinations will be scheduled by the college and they will take place during the final exam period. You must be available to write the final examination at the scheduled time. Holidays or scheduled flights are not considered as emergencies.

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

6. Recommended Materials or Services to Assist Students to Succeed Throughout the Course
There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of Academic Policies and Procedures at http://camosun.ca/learn/calendar/2010/pdf/academic.pdf. 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.bc.ca.