

**Math 218 – Introduction to Probability and Statistics 1  
Fall 2004**

**COURSE OUTLINE**

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**The Approved Course Description is available on the web at:**

**<http://www.camosun.bc.ca/calendar/courselist.php#MATH>**

*Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for your records.*

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### **1. Instructor Information**

- (a) Instructor Susan Chen
- (b) Office hours: please find them on my website
- (c) Location: E260
- (d) Phone: 370-3497
- (e) E-mail: [chen@camosun.bc.ca](mailto:chen@camosun.bc.ca)
- (f) Website : <http://ccins.camosun.bc.ca/~chen/>

### **2. Intended Learning Outcomes**

At the end of the course students will be able to:

1. Compute and interpret descriptive statistics.
2. Compute and interpret probability and conditional probability.
3. Compute probability, expectation and variance of a single discrete random variable, or a single continuous random variable. Perform calculations involving Binomial, Poisson, normal, or exponential probability distributions.
4. Perform calculations involving joint probability distributions of two discrete random variables, or random samples.
5. Derive and compute maximum likelihood estimates.
6. Compute and interpret interval estimate for the population mean, population proportion, and determine sample size.
7. Compute and interpret interval estimate for a difference of two means.
8. Test hypotheses about a mean, a proportion, and the difference of two means.

### **3. Required Materials**

- (a) Text:  
Devore, Jay L., “*Probability and Statistics for Engineering and the Sciences*”, Sixth edition, 2004
- (b) Lab Manual  
Chen, “*Math 218 Lab Manual*”, Camosun College Print Shop.
- (c) A scientific calculator with statistics mode

#### 4. Course Content and Other Course Information

<u>Topics</u>	<u>Sections</u>
1: Introduction and Descriptive Statistics	1.1 – 1.4
2: Probability	2.1 – 2.5
3: Discrete Random Variables and Probability Distributions	3.1 – 3.4, 3.6
4: Continuous Random Variables and Probability Distributions	4.1 – 4.4, 4.6
5: Joint Probability Distribution and Random Samples	Discrete parts of 5.1 – 5.2, 5.3 – 5.5
6: Point Estimation	6.1 – 6.2 (omit The Method of Moments)
7: Statistical Intervals: single sample	7.1 – 7.3
8: Tests of Hypotheses: single sample	8.1 – 8.2, 8.3 (omit $\beta$ and sample size determination and small-sample tests), 8.4, 8.5(omit likelihood ratio principle)
9: Inferences Based on Two Samples	9.1(omit $\beta$ and the choice of sample size), 9.2

**Computer Lab:** This course includes lab sessions designed to familiarize students with the use of a computer as a tool for statistical analysis. The software package we use is MINITAB. You must have a computer account and a lab manual ready before your first lab. The required lab manual is available in the bookstore at Lansdowne Campus. A lab assignment will be assigned for each lab session.

**Calculator:** A scientific calculator with statistics mode is required. For example, SHARP EL-531V Advanced D.A.L. (\$15 - \$20 range) is a suitable calculator. When you purchase a calculator, consider one that has the following functions that are necessary for Math 218: (1) Normal scientific calculations, (2) Single-variable statistical calculations, (3) Two-variable statistical calculations including correlation and linear regression. Different calculators function differently. You will need to learn to use your own calculator using the manual comes with it.

**Homework:** Homework problems for this course will be handed out in the first week of classes. They are posted on my web page as well. Answers for the “required” problems are to be submitted for credit. The required problems are divided into three (3) homework assignments. Homework #1 contains all the “required” problems associated with those sections of the textbook that will be examined in Test #1. Similarly, Homework #2 and #3 will include problems from those sections of the textbook that will be examined in Test #2 and #3, respectively. Homework #1, #2, and #3 are due in class immediately before tests #1, #2, and #3, respectively, for credit (to check for completion). For full mark, you must do the following:

- (i) Begin each section of homework with section number, page number and a list of problems required for the section. (e.g., Ch 1.1 p10-11 #5, 7, 9)
- (ii) Show all work for each problem. An answer without work (like the ones given in the textbook) will not be counted.
- (iii) Mark your answers against the answers in the back of the textbook. Mark your answer with a check sign “√” if correct; or mark it with an “X” with correction if incorrect. The number of incorrect problems will not affect your marks on the homework as long as corrections are made.
- (iv) Score each section as “number of problems completed”/“total number of problems required in the section” (e.g., for Ch 1.1, Score 2/3 if one problem is not completed, 3/3 if all three required problems are completed). Here, “number of problems completed” is the number of problems that you answered, regardless your answer is correct or incorrect, as long as correction is made.

- (v) Score the whole assignment as “the total number of problems completed”/”the total number of problems required for this whole assignment” (e.g., the score is 73/80 if the total number of required problems is 80 and 7 questions were not completed). Write the score on the front page of your assignment.
- (vi) Sort your answers by section in the order that the problems were assigned and staple the sheets together.

## 5. Basis of Student Assessment (Weighting)

A tentative schedule for the tests and their percentages as that of the final grade are given in the table below. Each test covers material learned between this test and the previous test. The final exam covers all materials. A student’s evaluation may be solely based the results of the final examinations provided that all homework and lab-assignments are completed and submitted on time.

**All tests must be written during the scheduled period and NO late assignments will be accepted. Final examinations will be held during December 13 – 18, and December 20-21. You must be available to write the final exam at the scheduled time.**

Test 1	Thursday, Oct. 7	13.33%
Test 2	Thursday, Nov. 4	13.33%
Test 3	Thursday, Dec. 2	13.33%
HW/Lab assignments		15%
Final exam	Time and room TBA	45%

Final Grade = Max (score1, score2)

where score1 = 15%(hw/lab) + 40% (tests) + 45%(final exam)

score2 = 100%(final exam) *if all lab/hw were completed and submitted on time, otherwise 0.*

## 6. Grading System

The following percentage conversion to letter grade will be used:

A+ = 95 - 100%	B = 75 - 79%	D = 50 - 59%
A = 90 - 94%	B- = 70 - 74%	F = 0.0 - 49%
A- = 85 - 89%	C+ = 65 - 69%	
B+ = 80 - 84%	C = 60 - 64%	

## 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, Registrar’s Office or the College web site at <http://www.camosun.bc.ca>

### ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy. It is the student’s responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section at [www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html](http://www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html)