	School of Arts & Science ***MATHEMATICS DEPARTMENT*** **MATH 254-section** **Probability and Statistics** **Semester/Year, eg, 2009W or 2009Q2**

COURSE OUTLINE

The Approved Course Description is available on the web @ _____

Ω *Please note: this outline will be electronically stored for five (5) years only.*
   It is strongly recommended students keep this outline for your records.

1. Instructor Information

(a)	Instructor:	Laura Shepherd	
(b)	Office Hours:	M-Th 11:30 – 12:20, W-Th 12:20-1:20, M-F 8:00 -8:30	
(c)	Location:	CBA 147	
(d)	Phone:	4448	Alternative Phone:
(e)	Email:	shepherd@camousn.bc.ca	
(f)	Website:	Through the math department web site.	

2. Intended Learning Outcomes
(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)

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

1. Use techniques from combinatorics to solve counting problems. Calculate probabilities using simple events, counting techniques, and the axioms and properties of probability and conditional probability. Define and identify independent events, mutually exclusive events, and complements. Calculate probabilities using Bayes' theorem.
2. Describe a discrete data set graphically via a stem-and-leaf display, histogram, relative frequency polygon, and box plot.
3. Describe a discrete data set numerically by calculating the mean, mode, median, sample and population variance, and sample and population standard deviation. Make predictions about the distribution of a data set using the Empirical Rule and Tchebyshev's Theorem.
4. Perform calculations and solve problems involving probability distributions of discrete random variables, including binomial, Poisson, hypergeometric, and negative binomial distributions. Calculate the expected value of a random variable. Perform calculations involving probability distributions of continuous random variables, including normal and gamma distributions. Use the Standard Normal Table to solve problems involving normal distributions.
5. Describe and identify sampling plans. Calculate sampling distributions for sample mean and sample proportion. Interpret control charts for sample mean and proportion.
6. For large samples, calculate point estimates and confidence intervals for population means and proportions. Perform large-sample tests of hypothesis for

population means and differences in means and for population proportions and differences in proportions.

7. For small samples, use the student's t distribution to calculate point estimates and confidence intervals and for hypothesis testing. For small samples, use the chi-square probability distribution to construct confidence intervals and perform hypothesis testing on the population variance.

8. For a bivariate data set, determine the regression (least squares) line, and calculate and interpret the coefficients of correlation and determination. Use least squares to fit quadratic, cubic, and exponential curves to a given bivariate data set.

3. Required Materials

(a) Texts: Mendenhall, Beaver, Beaver, and Ahmed, "Introduction to Probability and Statistics", Preliminary Canadian Edition, Nelson (2009). Also acceptable is the 12th edition of the Mendenhall, Beaver, and Beaver, "Introduction to Probability and Statistics", Thomson Brooks/Cole (2006) used last year, or earlier editions of this text.

4. Course Content and Schedule
CHAPTER 0 Train Your Brain for Statistics
CHAPTER 1 Describing Data with Graphs
CHAPTER 2 Describing Data with Numerical Measures
CHAPTER 3 Describing Bivariate Data
CHAPTER 4 Probability and Probability Distributions
CHAPTER 5 Several Useful Discrete Distributions
CHAPTER 6 The Normal Probability Distribution
CHAPTER 7 Sampling Distributions
CHAPTER 8 Large-Sample Estimation
CHAPTER 9 Large-Sample Tests of Hypotheses
CHAPTER 10 Inference from Small Samples
CHAPTER 12 Linear Regression and Correlation
A more detailed breakdown by section will be available on the Recommended Problems sheet handed out in the first week of class.

5. Basis of Student Assessment (Weighting)
Grade Calculation: The final grade will be calculated according to the following breakdown:

Quizzes (2): 50%
Final Exam: 50%

If you must miss a quiz please see me as soon as possible so that we may discuss what options you may have. If your final exam grade is higher than your term work grade and your term work is **50% or higher**, then your final exam grade will count for 100% of your final letter grade

6. Grading System
(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)

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 on the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED