



COURSE OUTLINE

Course Name: Probability and Statistics for Science and Engineering

Course Number: MATH 2700

Number of Credits: 3.0

Effective Date: September 2017

Course Description:

This course explores the mathematical theory of probability and statistics and is intended for students in Science, Engineering, Computer Science and Business degree programs. Students are introduced to the concepts of descriptive statistics, laws of probability, probability distributions for discrete, continuous and jointly distributed random variables, laws of expectation, estimation, hypothesis testing, correlation and regression.

School or Centre:

Arts and Sciences

Year of Study:

2nd Year Post-secondary

Course History:

Revised Course

Name of Replacing Course (if applicable):

Course Pre-requisites (if applicable):

MATH 1200 with a C- or equivalent.

Course Co-requisites (if applicable):

PLAR (Prior Learning Assessment & Recognition)

No Yes (details below):

Instructional Strategies:

The course uses a combination of lectures, case studies, simulations, presentations, guest speakers and software demonstrations.

Course Learning Outcomes:

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

1. Utilize a comprehensive set of descriptive statistical methods, in order to organize, summarize, display and interpret data.
2. Use probability rules to evaluate the probability of single and complementary events.
3. Calculate the expected value and variance of a discrete and continuous random variables.
4. Use discrete probability distributions (including binomial, geometric, and Poisson) in order to evaluate probability of events;
5. Use continuous probability distributions including the Normal, uniform, gamma, and exponential in order to evaluate probability of events;
6. Construct confidence interval estimates and hypotheses tests for population means, difference of means and proportions from one-sample and two-sample data.
7. Apply the law of large numbers and the central limit theorem.
8. Compute and interpret simple linear regression between two variables.

Program Learning Outcomes:

Evaluation/Grading System

Grading System	Specify if 'Other':	Specify Passing Grade:
Letter Grades		D

Components and Weighting of the Assessment/Evaluation Plan:

Type	Percentage	Evaluation Plan (provide a brief explanation for each component especially if value exceeds 35%):
Assignments	15	
Midterm Exam	25	
Midterm Exam	25	
Final Exam	35	
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Total		100

Learning Environment/Type

Instruction Type	Hours Per Instruction Type	Comments
L - Classroom	60	
Total		60

Resource Material(s):

Resources are items in addition to tuition that the student is responsible for purchasing. Course resource information will be supplied by the department/instructor.

Course Topics:

Descriptive statistics.

Laws of probability.

Discrete distributions: Variables, expectations, Binomial and Poisson's distributions

Continuous distributions: Normal, gamma and exponential distributions

Normal approximation to Binomial distribution and jointly distributed random variables

Sampling distributions and the Central Limit Theorem.

Estimation and hypothesis testing for one-sample, two-sample and matched pairs data;

Chi-square test for association

Correlation and regression.

VCC Education and Education Support Policies

There are a number of **Education** and **Education Support** policies that govern your educational experience at VCC, please familiarize yourself with them.

The policies are located on the VCC web site at:

<http://www.vcc.ca/about/governance--policies/policies/>

To find out how this course transfers, visit the BC Transfer Guide at www.bctransferguide.ca.

FOR COMMITTEE USE ONLY

Approved by Curriculum Committee:		Approved by Education Council:	
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