UNIVERSITY COLLEGE of the FRASER VALLEY

PAC FORM #2 (Page 1)

COURSE IMPLEMENTATION DATE:	September 1994
COURSE REVISED IMPLEMENTATION DATE:	January 1999
COURSE TO BE REVIEWED:	January 2003
(Four years after implementation date)	(MONTH YEAR format)

OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department and the material will vary - see course syllabus available from instructor

FACULTY/DEPARTMENT: **MATHEMATICS and STATISTICS**

MATH 270		**4**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

INTRODUCTION TO PROBABILITY and STATISTICS
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

An introduction to probability and statistics using calculus, for engineering, science and mathematics students.

PREREQUISITES: **MATH 112, or MATH 114 or MATH 116 with C or better.**
COREQUISITES: **None**

SYNONYMOUS COURSE(S)
(a) Replaces: ____________ *(Course #)*
(b) Cannot take: ____________ *(Course #)* for further credit.

SERVICE COURSE TO:
____________ *(Department/Program)*
____________ *(Department/Program)*

TOTAL HOURS PER TERM: **75**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:	**30**	Hrs
Field Experience:		Hrs
Student Directed Learning:		Hrs
Other (Specify):		Hrs

TRAINING DAY-BASED INSTRUCTION
LENGTH OF COURSE: ____________
HOURS PER DAY: ____________

MAXIMUM ENROLLMENT: **24**
EXPECTED FREQUENCY OF COURSE OFFERINGS: ____________

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☒ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☐ No

AUTHORIZATION SIGNATURES:

Course Designer(s):	Dr. B. Garner	Chairperson:	N. Weinberg, E. Davis *(Curriculum Committee)*
Department Head:	S. Milner	Dean:	K. Wayne Welsh
PAC Approval in Principle Date:		PAC Final Approval Date:	October 28, 1998

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

This course is designed to give students:
1. The basic mathematical notions and formulas pertaining to probability and statistics.
2. The notion of variation inherent in all measurements.
3. The rules of probability, especially conditional probability; the interpretation of probability as frequency or degrees of belief.
4. Simple mathematical models for variation.
5. Inference based on least squares and likelihood.
6. Confidence Intervals and Tests of Hypotheses.

METHODS:

Classroom lectures. The use of graphing calculators and computer labs using standard software for simulation and data analysis.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check :) ☐ Yes ☐ No

METHODS OF OBTAINING PLAR:

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Jay Devore, Probability and Statistics for Engineering and the Sciences, 4^{th} Ed., Duxbury.

SUPPLIES / MATERIALS:

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

This may vary slightly depending on the instructor. A typical breakdown is as follows:

Assignments	20%
In-class tests	40%
Final Examination	40%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Descriptive Statistics: frequency tables, histogram, empirical distribution function, percentiles, mean, variance, standard deviation (SD). Finite populations, population mean, variance, SD. Means and SD of functions of variables.

Bivariate frequencies, conditional mean, regression, correlation. Linear regression as minimizing Mean Square Error.

Probability rules, multiplication, independence. Attribute sampling with and without replacement. Random variables, mass and density functions, expectations and variances of linear combinations of random variables.

Discrete probability distributions, binomial, Poisson, hypergeometric. Continuous probability distributions, exponential waiting time, normal.

Introduction to the chi-square, t and F distributions without proofs.

Inference: Maximum likelihood estimators, their asymptotic normality, invariance under transformation. Tests of hypotheses and confidence intervals for binomial, Poisson and normal data, the P-value, two independent samples and matched pairs designs.

Least squares estimation for multiple linear regression, the ANOVA table. The use of indicator variables for categories. The randomized block design.