PAC FORM #2

UNIVERSITY COLLEGE of the FRASER VALLEY

COURSE IMPLEMENTATION DATE: [Sept-93]
COURSE REVISED IMPLEMENTATION DATE: [Sept-03]
COURSE TO BE REVIEWED: [Sept-06]
(Four years after implementation date)

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 104		**4**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

INTRODUCTORY STATISTICS
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is an introduction to descriptive statistics, sampling, probability, estimation, hypothesis testing, correlation, and regression. It provides an intuitive approach to why and when the procedures may be used, without involving mathematical proofs.
This course is recommended for anyone who wishes to develop the ability to intelligently evaluate published statistical data, and for students of arts, criminal justice, education, and social science in particular.
As a general rule, students with Math 11 are expected to take MATH 104, those with Math 12 are expected to take MATH 106, and those with a full year of calculus are expected to take MATH 270. Students should check program requirements.
Students with credit for MATH 106 or MATH 270 are not allowed to take MATH 104. Students with MATH 104 may subsequently take MATH 270 in order to satisfy the requirements for a math degree.

PREREQUISITES: **A C or better in one of the following: Math 11 (or Principles of Math 11), or Applications of Math 11, or MATH 085; or 45 university-level credits with department permission.**
COREQUISITES:

SYNONYMOUS COURSE(S)
(a) Replaces: _____ *(Course #)*
(b) Cannot take: **See above** *(Course #)* For further credit.

SERVICE COURSE TO:
Arts *(Department/Program)*
Criminal Justice *(Department/Program)*

TOTAL HOURS PER TERM: **75**
STRUCTURE OF HOURS

Lectures:	**75**	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field Experience:		Hrs
Student Directed Learning:		Hrs
Other (Specify):		Hrs

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

MAXIMUM ENROLLMENT: **36**
EXPECTED FREQUENCY OF COURSE OFFERINGS: **Fall, Winter, and Spring**

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): Linda Riva / MathDept - update
Chairperson: Jim Andersen - *Arts Curriculum Committee*
Department Head: Gillian Mimmack
Dean: Linda Matwichuk
PAC Approval in Principle Date: _____
PAC Final Approval Date: May 28, 2003

MATH 104
COURSE NAME/NUMBER

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

The successful student will be able to:

1. construct frequency tables, histograms and cumulative frequency diagrams from raw data;
2. obtain simple measures of location and dispersion from the data, and interpret the same;
3. calculate, with the use of technology, the correlation between two sets of data, and obtain and interpret lines of "best" fit;
4. solve simple problems in probability requiring knowledge of conditional probability and statistical independence;
5. use simple mathematical models for commonly occurring situations such as sampling with replacement, and physical or biological measurements;
6. apply Pearson's chi-square statistic to draw inferences in appropriate categorical sampling situations;
7. draw inferences using linear regression

METHODS:

Lectures, mixed with sessions in the computer lab.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):
Credit can be awarded for this course through PLAR ☒ Yes ☐ No

METHODS OF OBTAINING PLAR:

Course challenge.

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

The text is chosen by a departmental curriculum committee.

Recent text:
Moore and Freeman, WH. *The Basic Practice of Statistics*. Second edition.

SUPPLIES / MATERIALS:

A scientific calculator with statistical functions is required.

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

Assignments and quizzes	20-30%
Mid-term examinations (2)	30-40%
Final examination	40-45%

Students must achieve at least 40% on the final exam in order to receive credit for this course.

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

1. Introduction to statistical concepts, e.g. variation; and software, e.g. MINITAB, Excel, Quattro Pro.

2. Descriptive statistics:
   Frequency tables, histograms, cumulative frequencies, etc.
   Measures of location, e.g. mean, median, mode; and scale, e.g. standard deviation, quantiles.
   Linear transformations.
   Bivariate data, correlation, linear regression, least squares, interpretation of computer output.

3. Probability:
   Two-way tables, Venn and tree diagrams; joint, marginal and conditional probability.
   Independence and dependence.
   Simple models for discrete random variables, sampling with and without replacement.
   Expectation, mean, variance and standard deviation.
   The normal distribution, standardization, linear transformations.
   The chi-square probability distribution.
   Random sampling, simulation, especially as applied to limit theorems, e.g. the Central Limit Theorem.

4. Inferential statistics:
   Estimation, confidence intervals and tests of hypothesis.
   These notions applied to proportions, rates and means for one and two populations.
   Pearson's chi-square statistic applied to a variety of problems, e.g. goodness-of-fit, testing for independence in a two-way table.
   The student "t" probability distribution.
   Confidence intervals and test of hypothesis about the slope in simple linear regression.