UNIVERSITY COLLEGE of the FRASER VALLEY

PAC FORM #2 (Page 1)

COURSE IMPLEMENTATION DATE:	September 1990
COURSE REVISED IMPLEMENTATION DATE:	January 2009
COURSE TO BE REVIEWED:	December 2012
(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 106		**4**
COURSE NAME/NUMBER	FORMER COURSE NUMBER	UCFV CREDITS

STATISTICS 1

COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

This course is an introduction to descriptive statistics, sampling, probability, estimation, hypothesis testing, correlation, regression, and analysis of variances. This course is similar to MATH 104, but includes multiple regression, one-way ANOVA, and a more detailed discussion of probability results. Facility with Grade 12 level algebra is expected, but no calculus is required. 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.

Before registering, students should check the requirements of their program. UCFV mathematics degrees require MATH 270. While MATH 106 is not equivalent to MATH 270, students with credit for MATH 270 are not allowed to take MATH 106. Those with credit for MATH 106 may subsequently take MATH 270 in order to satisfy the requirements for a math degree.

PREREQUISITES: **C or better in one of the following: a recent Principles of Math 12, or Applications of Math 12, or MATH 110 or MATH 124; or a C or better in both Math 094 and MATH 095**

COREQUISITES: **None**

SYNONYMOUS COURSE(S)

(a) Replaces: **N/A/** *(Course #)*

(b) Cannot take: **(SEE ABOVE)** *(Course #)* for further credit.

SERVICE COURSE TO:

Business And Administration *(Department/Program)*

Biology *(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): Susan Milner & Linda Riva/ Barry Garner - update

Chairperson: *(Curriculum Committee)*

Department Head: Greg Schlitt

Dean: Jackie Snodgrass

PAC Approval in Principle Date: October 10, 2008

PAC Final Approval Date: December 19, 2008

LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:

The successful student will be able to:

1. Construct frequency tables, histograms and cumulative frequency diagrams, scatter diagrams and regression lines from raw data by the use of appropriate technology;
2. Obtain simple measures of location and dispersion, correlation and regression from the data, and interpret the same;
3. Solve simple problems in probability requiring knowledge of conditional probability and statistical independence;
4. Use simple mathematical models for commonly occurring situations such as sampling with replacement, and commercial or biological measurements;
5. Apply Pearson's chi-square statistic to draw inferences in appropriate categorical sampling situations;
6. Apply and interpret multiple regression models and the associated Analysis of Variance (ANOVA) tables;
7. Use indicator (dummy) variables with categorical data so to apply the methods of multiple regression.

METHODS:

Lectures, mixed with sessions in the computer lab.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Credit can be awarded for this course through PLAR (Please check :) ☒ 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:
McClave and Sincich. *Statistics*. 8th edition. Prentice-Hall.

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, the analysis of variance table, interpretation of computer output.

3. Probability:
   Two-way tables, Venn and tree diagrams; joint, marginal and conditional probability.
   Independence and dependence. Bayes' Theorem.
   Counting rules.

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 techniques 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, independence in a two-way table, equality of binomial proportions, comparison of related proportions, comparison of rates.
   The Student 't' and Fisher's 'F' probability distributions.
   Comparison of the means of several populations the one-way ANOVA table.
   Confidence intervals and test of hypothesis about the slope in simple linear regression.
   Multiple regression, interpretation of the equation, R-square, the ANOVA table.