OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

UNIVERSITY OF THE FRASER VALLEY

COURSE IMPLEMENTATION DATE: September 2002
COURSE REVISED IMPLEMENTATION DATE: September 2009
COURSE TO BE REVIEWED: June 2013
(four years after UPAC approval) *(month, year)*

OFFICIAL UNDERGRADUATE 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 – see course syllabus available from instructor

MATH 488	SCIENCE/MATH & STATS	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Selected Topics in Statistics
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION: This course is designed for students who wish to examine in greater depth a particular statistical technique or application. It will be offered either as an individual reading course or as a seminar, depending upon student and faculty interest. May not be repeated for additional credit.

PREREQUISITES: Four upper-level Mathematics courses, including at least three listed under the Statistics option for the BA or BSc degree. Certain programs of study may require more particular prerequisites. The written permission of the instructor is required.
COREQUISITES: None
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: 45
STRUCTURE OF HOURS:

Lectures:		Hrs
Seminar:	45	Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: 24
Expected frequency of course offerings: By student request and dept approval
(every semester, annually, every other year, etc.)

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

Course designer(s): Ali Fotouhi

Department Head:	Greg Schlitt	Date approved:	March 2, 2009
Supporting area consultation (UPACA1)		Date of meeting:	**March 27, 2009**
Curriculum Committee chair:	Norm Taylor	Date approved:	**May 29, 2009**
Dean/Associate VP:	Dan Ryan	Date approved:	**June 8, 2009**
Undergraduate Program Advisory Committee (UPAC) approval		Date of meeting:	**June 26, 2009**

LEARNING OUTCOMES:

Note: Learning objectives will vary with the course and the instructor. The following is a sample:

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

- Demonstrate familiarity with certain measures of disease occurrence and association that are commonly used in the epidemiologic literature;
- Understand the application of, and themselves apply, the classical methods of analysis of case-control studies, which include exact inference for a 2 x 2 table and the Cochran-Mantel-Haenszel test for multiple odds-ratios;
- Construct a design for a particular case-control study: e.g. sample size determination, stratification and use of matching factors;
- Apply modern computer intensive methods of analysis including multiple logistic regression and conditional logistic regression to case-control data.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Individual tutorials or small seminar groups; directed work on the computer.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☐ Examination(s) ☐ Portfolio assessment ☐ Interview(s)

☒ Other (specify): For this particular example of course content, a portfolio demonstrating extensive practical experience in university or governmental epidemiological research, analyzing retrospective data by methods including logistic and conditional logistic models.

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

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

The texts are chosen by a departmental curriculum committee.

Breslow, N.E. and Day, N.E. *Statistical Methods in Cancer Research, Volume 1 – The Analysis of Case-Control Studies*. International Agency for Research on Cancer, WHO.

Cox, D.R. *Analysis of Binary Data.* Chapman & Hall.

Fienberg, S.E. *The Analysis of Cross-Classified Categorical Data*. MIT Press.

STUDENT EVALUATION:

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

Assignments	20%
Projects	20%
Midterm examinations	20%
Final examination	40%

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:]

This particular course content description assumes that the student has covered the content of MATH 402.

Role of the case-control (retrospective) study in epidemiology.

Fundamental measures of disease occurrence and association; point prevalence, incidence, rates, age- and time-specific incidence rates, the force of mortality, birth-cohorts, cumulative incidence rates; models of disease association, relative risk, odds ratio, invariance of odds-ratio from retrospective or prospective studies; attributable risk.

Design considerations for the applicability of case-control studies; bias, confounding, causality; stratification, matching factors; interaction and effect modification.

Classical methods of the analysis of categorical grouped data; exact inference for a single 2 x 2 table, approximations, test-based confidence intervals; several 2 x 2 tables – the Cochran-Mantel-Haenszel test; the 2 x K table.

Classical methods of analysis of matched categorical data; dichotomous exposure – the odds-ratio as the ratio of the two types of discordant pairs; 1:M matching; varying numbers of controls; multiple exposure levels.

Unconditional logistic regression for large strata; adaptation of the logistic model to case-control studies; the deviance.

Conditional logistic regression for matched sets; bias arising from the use of unconditional logistic analysis; matched 1:M designs; combining sets of 2 x 2 tables; general methodology.