UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: January 1995
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 350	SCIENCE/MATH & STATS	3
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Survey Sampling
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION: This course introduces the theory and practice of survey sampling. The basic theory of simple random sampling, stratified random sampling, ratio estimation, cluster sampling, and systematic sampling is covered, together with the more specialized topics of questionnaire design, estimation of population size, and the random response method for sensitive questions. Students are expected to produce a report resulting from analyzing data collected in a survey which they have designed and conducted and which illustrates at least one of the sample designs discussed during the course.

PREREQUISITES: MATH 106 with at least a B, or MATH 270, or MATH 104 with a B+
COREQUISITES:
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: 60

STRUCTURE OF HOURS:

Lectures:	30	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:

OTHER:
Maximum enrolment: 36
Expected frequency of course offerings: Every second fall semes
(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 4, 2009
Undergraduate Program Advisory Committee (UPAC) approval — Date of meeting: June 26, 2009

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:
1. design a questionnaire, conduct a small survey, analyze the sample data, and complete a report on the findings;
2. estimate population means, totals, and proportions in terms of confidence intervals calculated from simple random samples taken from finite populations or from infinite populations;
3. estimate population means, totals, and proportions from stratified random samples, select appropriate sample sizes, and allocate the sample optimally;
4. apply ratio estimators in the contexts of simple and stratified random sampling;
5. estimate population means, totals, and proportions and calculate bounds on the error of estimation in the context of cluster sampling, where cluster sizes may be equal or proportional;
6. estimate population sizes using direct sampling and inverse sampling.

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

Lectures, discussions in class, use of statistical software in computing labs.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

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

☒ Other (specify): Course Challenge

☐ 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 textbook is chosen by a departmental curriculum committee. Recent texts used:
Text: Scheaffer, Mendenhall and Ott. *Elementary Survey Sampling*. 5th edition. Duxbury.
Reference: Cochran. *Sampling Techniques*. 3rd edition. Wiley.

STUDENT EVALUATION:

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

Project	15%
Assignments	15%
In-class tests	30%
Final examination	40%

Student must obtain at least 40% on the final exam in order to pass this course.

COURSE CONTENT:

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

Elements of the sampling problem: The design of the survey sample, sources of errors in surveys, non-response, designing a questionnaire, planning a survey.
Simple random sampling: Variance, correction for finite populations, standard error, random sampling with replacement, estimating population means, totals and proportions, selecting samples of appropriate sizes.
Stratified random sampling: Estimating population means, totals and proportions, selecting the sample size, allocation of the sample and the optimal rule, post-stratification.
Ratio estimator: Variance, correlation coefficient, ratio estimation in simple random sampling, selecting the sample size, ratio estimation in stratified random sampling, regression estimation.
Systematic sampling: Methods of obtaining systematic samples, estimation of population means, totals and proportions, calculating appropriate sample sizes.
Cluster sampling: Estimating population means, totals and proportions when the clusters are of the same size, cluster sampling combined with stratification, cluster sampling with probabilities proportional to size.
Estimating the population size: Estimation of population sizes using direct sampling and inverse sampling.
Supplemental topics: Two-stage cluster sampling, random-response model.