

COURSE IMPLEMENTATION DATE: September 1993  
 COURSE REVISED IMPLEMENTATION DATE: January 2013  
 COURSE TO BE REVIEWED: January 2014  
*(six years after UEC 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

STAT 104	Science/Mathematics & Statistics	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS
Introductory Statistics		
COURSE DESCRIPTIVE TITLE		

**CALENDAR DESCRIPTION:**

This course is an introduction to descriptive statistics, probability, sampling, 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.

Note: As a general rule, students with Math 11 are expected to take STAT 104, those with Math 12 are expected to take STAT 106, and those with a full year of calculus are expected to take STAT 270/MATH 270. Before registering, students should check program requirements. Students with credit for STAT 106 or STAT 270 are not allowed to take STAT 104. Students with STAT 104 may subsequently take STAT 270 in order to satisfy the requirements for a math degree. Students with credit for MATH 104 cannot take this course for further credit.

**PREREQUISITES:** One of the following: C or better in one of Principles of Math 11, Applications of Math 11, MATH 085, Foundations of Mathematics 11, or Precalculus 11; or B or better in Apprenticeship and Workplace Mathematics 12; or one of Foundations of Mathematics 12, Precalculus 12, Principles of Math 12, or Applications of Math 12; or 45 university-level credits with department permission.

**COREQUISITES:**

**SYNONYMOUS COURSE(S):**

- (a) Replaces: MATH 104
- (b) Cross-listed with: \_\_\_\_\_
- (c) Cannot take: STAT 106, STAT 270/MATH 270 for further credit.

**SERVICE COURSE TO:**

Arts  
Criminal Justice

**TOTAL HOURS PER TERM:** 60

**STRUCTURE OF HOURS:**

Lectures: 60 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: \_\_\_\_\_

**OTHER:**

Maximum enrolment: 36  
 Expected frequency of course offerings: Fall, Winter, Summer  
*(every semester, annually, every other year, etc.)*

**WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)**

Yes  No

**TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:**

Yes  No

Course designer(s): <u>Stats Committee</u>	Date approved: <u>March 5, 2012</u>
Department Head: <u>Greg Schlitt</u>	Date of meeting: <u>March 30, 2012</u>
Supporting area consultation (Pre-UEC)	Date approved: <u>April 20, 2012</u>
Curriculum Committee chair: <u>Norm Taylor</u>	Date approved: <u>May 4, 2012</u>
Dean/Associate VP: <u>Ora Steyn</u>	Date of meeting: <u>May 23, 2012</u>
Undergraduate Education Committee (UEC) approval	

**LEARNING OUTCOMES:**

Upon successful completion of this course, students 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. construct and interpret confidence intervals, and test of hypotheses for means and proportions, interpret p-value;
7. draw inferences using linear regression.
8. apply Pearson's chi-square statistic to draw inferences in appropriate categorical sampling situations;
9. identify sources of potential bias in data and be able to obtain their own random samples.

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

Lectures, mixed with sessions in the computer lab.

**METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):**

- Examination(s)                       Portfolio assessment                       Interview(s)
- Other (specify): Course Challenge; see PLAR policy (94) at <http://ufv.ca/secretariat/policies/>

**TEXTBOOKS, REFERENCES, MATERIALS:** *[Textbook 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, SPSS.
2. Descriptive statistics: Frequency tables, histograms, cumulative frequencies, etc.  
Measures of location, e.g. mean, median, mode; and scale, e.g. standard deviation, quartiles.  
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.  
Mean, variance and standard deviation.  
The normal distribution, standardization, linear transformations.  
Random sampling, Central Limit.  
Theorem applications.
4. Inferential statistics: The student "t" probability distribution; Estimation, confidence intervals and tests of hypothesis; p-values  
These notions applied to proportions, rates and means for one and two populations.  
The chi-square probability distribution. Pearson's chi-square statistic applied to a variety of problems, e.g. goodness-of-fit, testing for independence in a two-way table.  
Confidence intervals and test of hypothesis about the slope in simple linear regression
5. If time allows: simple experimental design.