UNIVERSITY OF THE FRASER VALLEY

ORIGINAL COURSE IMPLEMENTATION DATE: September 1993
REVISED COURSE IMPLEMENTATION DATE: September 2026
COURSE TO BE REVIEWED (six years after UEC approval)**:** November 2031
Course outline form version: 29/08/2024

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: STAT 104	**Number of Credits:** 4 Course credit policy (105)
Course Full Title: Introductory Statistics **Course Short Title:** Introductory Statistics	
Faculty: Faculty of Science	**Department/School:** Mathematics & Statistics

Calendar Description:

A basic introduction to descriptive statistics, probability, sampling, estimation, hypothesis testing, correlation, and regression. Recommended for anyone who wishes to evaluate research involving statistical analysis, especially students in humanities and social science. Using statistical computer software is essential to this course.

Note: As a general rule, students with Mathematics 11 are prepared to take STAT 104, those with Mathematics 12 are prepared to take STAT 106, and those with a full year of calculus are prepared to take STAT 270/MATH 270. Before registering, students should check the requirements of their program. The UFV Mathematics major program requires STAT 270, while the Mathematics minor program requires STAT 106 or STAT/MATH 270.

Note: Some degree and diploma credentials may allow only one of STAT 104 or STAT 106 to count as credit towards meeting program requirements.

Prerequisites (or NONE):	One of the following: (C or better in one of Principles of Mathematics 11, Applications of Mathematics 11, MATH 085, Foundations of Mathematics 11, Pre-calculus 11, Calculus 12, or Statistics 12) or (B or better in one of Workplace Mathematics 11, History of Mathematics 11, Apprenticeship Mathematics 12, or Apprenticeship and Workplace Mathematics 12) or (one of Foundations of Mathematics 12, Pre-calculus 12, Principles of Mathematics 12, or Applications of Mathematics 12) or (any UFV MATH course numbered 092 or higher) or (a score of 17/25 or better on Part A of the MSAT) or (45 university-level credits with department permission).
Corequisites (if applicable):	None.
Pre/corequisites (if applicable):	None.

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number: **MATH 104**

Cross-listed with: **n/a**

Equivalent course(s): **n/a**

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar	40
Supervised laboratory hours (computer lab)	20
Total hours	**60**

Scheduled Laboratory Hours

Labs to be scheduled independent of lecture hours: **No**

Course Details

Special Topics course: **No**

(If yes, the course will be offered under different letter designations representing different topics.)

Directed Study course: **No**

(See policy 207 for more information.)

Grading System: **Letter grades**

Delivery Mode: **May be offered in multiple delivery modes**

Expected frequency: **Every semester**

Maximum enrolment (for information only)**: 36**

Prior Learning Assessment and Recognition (PLAR)

PLAR is available for this course.

Transfer Credit *(See bctransferguide.ca.)*

Transfer credit already exists: **Yes**

Submit outline for (re)articulation: **No**

Department approval	**Date of meeting:**	August 25, 2025
Faculty Council approval	**Date of meeting:**	October 3, 2025
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	November 21, 2025

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

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

1. Construct histograms, boxplots, and other graphs from raw data, and interpret these graphs.
2. Obtain simple measures of location and dispersion from the data and interpret the same.
3. Calculate the correlation between two linearly related variables, create scatterplots, and obtain, use, 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 (e.g. normal and binomial distributions) for commonly occurring situations such as sampling with replacement, and physical or biological measurements.
6. Solve simple problems involving the distribution of the sample mean using statistical theory such as the Central Limit Theorem
7. Construct and interpret confidence intervals for means and proportions and for differences in means and check the conditions for inference in these cases.
8. Conduct tests of hypotheses for means and proportions and for differences in means, interpret p-values, check the conditions for inference in these cases.
9. Draw inferences using linear regression.
10. Apply Pearson's chi-square statistic to draw inferences in appropriate categorical sampling situations.
11. Identify potential sources of bias in data collection methods, with attention to under-representation of Indigenous and other marginalized populations in surveys in Canada.
12. Obtain their own random samples using probability sampling methods.
13. Use statistical software for calculations and graphs throughout the course.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Final exam:	40%	Assignments:	10%		%
Quizzes/tests/midterm:	50%		%		%

Details:

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture and computer lab hours. Learning is holistic, reflective, and experiential. Students are encouraged to learn from and help one another.

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. Open Educational Resources (OER) should be included whenever possible. If more space is required, use the Supplemental Texts and Resource Materials form.)*

	Type	Author or description	Title and publication/access details	Year
1.	Book	Moore, D.S., Notz, W.I. & Fligner, M.A.	The Basics Practice of Statistics, 9TH Edition	2021
2.	Online resource	Statistics Canada	Statistics Canada website (https://www.statcan.gc.ca/en/start)	
3.				

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Course Content and Topics

1. Introduction to statistical concepts, e.g. variation; and software, e.g. MINITAB, Excel, SPSS.
2. Descriptive statistics: Use statistical software to obtain histograms, stem-and-leaf plots, boxplots, etc. Measures of location, e.g. mean, median, mode; and scale, e.g. standard deviation, quartiles. Bivariate data: use statistical software to obtain correlation, linear regression line, use and interpret 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. The normal distribution, standardization, application of Central Limit Theorem.
4. Inferential statistics: Estimation, use statistical software to obtain confidence intervals and conduct tests of hypothesis for means, proportions and differences of means; p-values; conditions for inference. Use statistical software to calculate Pearson's chi-square statistic in a variety of situations, e.g. goodness-of-fit, testing for independence in a two-way table. Use statistical software to calculate confidence intervals and conduct tests of hypothesis about the slope in simple linear regression.
5. Bad sampling designs (e.g., voluntary response samples, convenience samples) and other sources of error in data, including reference to under-representation of Indigenous and marginalized populations in Canada. Use random number tables to obtain probability samples.
6. If time allows: simple experimental design.