STAT-106 – Statistics

University Arts and Science

Effective Term & Year: Fall 2025
Course Outline Review Date: 2030-04-01

Program Area: Math and Sciences

Description:

This course introduces the fundamental ideas of statistics and can be applied to any discipline. Topics include: collection, description, and presentation of data; calculating central tendency and dispersion; probability and statistical inference; hypothesis testing (means, proportions, variances, one and two samples); correlation and regression; decision making and sampling, Goodness of Fit Tests, and Contingency Tables.

Program Information:

This course can be used as 3 credits towards any College of the Rockies arts or science certificate or diploma. It is a required course in the Business Administration diploma.

Delivery Methods: On-campus (Face-to-Face), Online

Credit Type: College of the Rockies Credits

Credits: 3

Course type/s: Sciences

Instructional Activity and Hours:

Activity	Hours
Classroom, Directed Studies or Online Instruction	45
Seminar/Tutorials	
Laboratory/Studio	15
Practicum/Field Experience	

Co-op/Work Experience	
Other	
Total	60

Course Requisites:

- Earned a minimum grade of C+ (65%) in at least 1 of the following:
  - CS 11 – Computer Science 11
  - FOM 11 – Foundations of Mathematics 11
  - PREC 11 – Pre-Calculus 11
  - CALC 11 – Calculus 11
  - CS 12 – Computer Science 12
  - FOM 12 – Foundations of Mathematics 12
  - PREC 12 – Pre-Calculus 12
  - CALC 12 – Calculus 12
  - GEO 12 – Geometry 12
  - STAT 12 – Statistics 12
  - MATH080 – Mathematics – Advanced Level
  - MATH090 – Mathematics – Provincial Level
  - MATH101 – Finite Mathematics 1 (3)
  - MATH111 – Business Mathematics (3)

Prior Learning and Recognition: Yes

Students are able to request formal recognition of their prior learning or experience outside the classroom. Challenge examination, portfolio-assisted assessment, work-based assessment or a combination of assessments that is appropriate to identify, assess, and recognize prior skills, competencies, and knowledge to achieve course credit. Tuition fees apply, refer to Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR) or contact an education advisor for more information.

Course Transfer Credit:

For information about receiving transfer credit for courses taken at either British Columbia or Alberta institutions, please see https://www.bctransferguide.ca/ or https://transferalberta.alberta.ca . For more transfer credit information, please visit https://www.cotr.bc.ca/Transfer

All requests for course transfer credit from institutions in British Columba or elsewhere should go to the College of the Rockies Enrolment Services office.

Textbook Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

Triola (2018) *Elementary Statistics Using Excel,* 6th Edition, Pearson Canada

Please see the instructor's syllabus or check COTR's online text calculator https://textbook.cotr.bc.ca/ for a complete list of the currently required textbooks.

Learning Outcomes:

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

- collect, collate, analyze and interpret data for educational, planning, decision making, and evaluation purposes;
- present and interpret data in such a manner that it is understood and meaningful to colleagues, peers, and clients;
- use Microsoft Excel to collate and analyze data, create charts, and calculate statistical information;
- critically analyze statistical information portrayed in the media, work, and educational environments;
- calculate the mean, median, and mode of both raw and grouped data, as appropriate;
- calculate an appropriate measure of variation (range, variance, mean deviation, standard deviation, coefficient of variation, and coefficient of skewness);
- use combinations, permutations, and the counting laws of sets to calculate probabilities, conditional probabilities (including Bayes' Theorem), and probability distributions;
- recognize and use the Normal, Binomial, Hypergeometric, and Poisson probability distributions;
- understand the Central Limit Theorem and be able to construct confidence intervals and to determine appropriate sample sizes;
- perform hypothesis tests of both small and large samples, on one and two sample sets of data for means, proportions, and variances;
- know the properties of and be able to use Z, t, and Chi-squared distributions;
- perform Goodness of Fit tests, and work with contingency tables to test for independence; and
- calculate and determine the significance of linear correlation coefficients and calculate regression lines and predication/confidence intervals.

Course Topics:

- Descriptive Statistics – frequency distributions, measures of center and dispersion,

pictures of data, other descriptive measures.
- An introduction to Probability Theory – counting techniques, set theory, conditional probabilities, independence.
- Probability Distributions – discrete and continuous distributions, special families of distributions such as Binomial, Poisson, Hypergeometric, and Normal.
- Inferential Statistics – the Central Limit Theorem, Confidence Intervals, One and Two Sample Hypothesis tests for Means, Proportions, and Variances.
- Correlation and Regression.
- Goodness of Fit tests and Tests of Independence.

See instructor's syllabus for the detailed outline of weekly readings, activities and assignments.

Evaluation and Assessments

Assessment Type: On-Campus (face-to-face) and Online, or Hybrid

Assessment Type	% of Total Grade
Assignments/Quizzes	15 – 25%
Labs	15 – 20%
Midterm(s)	20 – 35%
Final Exam	30 – 40%
Total	100%

Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	<50

Evaluation Notes: A grade of "D" grants credit, but may not be sufficient as a prerequisite for sequential courses.

Evaluation Notes Comments:

Please see the instructor syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments, and use of electronic aids.

Please see instructor's syllabus for assessment values.

Exam Attendance:

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior

approval will receive a “0” on the exam.

Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.1.4 Course Audit
- Policy 2.4.1 Credential Framework
- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Rights, Responsibilities and Conduct
- Policy 2.4.8 Academic Performance
- Policy 2.4.9 Student Feedback and Concerns
- Policy 2.4.11 Storage of Academic Works
- Policy 2.5.3 Student Appeal
- Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR)

Equivalent Course(s) and Course Code Changes

Prior Course Code: MATH 106

Date changed: March 2010

Course Changes:

The College of the Rockies updates course outlines regularly to meet changing educational, employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outline.