School of Business and Leadership

MATH 210
Applied Statistics

Term: Winter 2022
Number of Credits: 3

Course Outline

INSTRUCTOR: Lisa Kanary
E-MAIL: lkanary@yukonu.ca
OFFICE HOURS: Wednesday 11:00 – 12:00
TIME: Zoom Wednesday 2:00 – 3:55pm

COURSE DESCRIPTION

Through practical application and exposure to a teamwork environment, this course provides students with a general understanding of the statistical techniques used in solving business problems, making managerial decisions, and undertaking market research in a global and northern Canadian context. The goal is for the student to acquire skills to methodically gather, use, analyze, communicate, organize and interpret data for northern problems and challenges that can be found in various business contexts (e.g., all levels of government, research, not for profits, and private business).

Topics covered in this course include graphical techniques for data and presentation, measures of central location and variability, probability, discrete and continuous probability distributions, sampling distributions, estimation, and hypothesis testing. Students will learn how to apply knowledge gained in these areas using statistical computer applications.

COURSE REQUIREMENTS

MATH141 & COMP161 or equivalents, or permission from the program.

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at:
https://www.yukonu.ca/admissions/transfer-credit

LEARNING OUTCOMES

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

1. Reflect on historical and present northern situations which require statistical analysis and ethical consideration.
2. Identify and apply basic business statistical tools and concepts while working with statistical problems that are found in northern Canadian business contexts (e.g. all levels of government, research organizations, not for profits, and private businesses).
3. Identify and model the appropriate graphical and/or numerical technique in a business situation.

4. Calculate measures of central tendency, variability, and association between two variables using descriptive statistics on data.
5. Quantify uncertainty and assess business risk using discrete, continuous, or sampling probability distributions.
6. Recognize appropriate techniques to conduct and interpret hypothesis tests of population means and proportions.
7. Identify when to use model-based estimation and prediction methods with business applications.
8. Apply statistical knowledge gained in the course to northern business situations using statistical computer applications.

COURSE FORMAT

The course will be delivered using a combined format of recorded lectures, cases, discussions, and computer lab sessions. Each week, material will be covered in a lecture format, then followed by a computer lab session. During the lab session, methods and concepts discussed in the lecture will be applied to examples and exercises using statistical software. Typical breakdown is 2 hours of lecture and 2 hours of lab time each week.

A course web page is set up in Moodle. The course web page will serve as a repository for the course materials handed out in class and any data files required to complete the assignments. Content will be added to the web page as the course progresses.

EVALUATION

Assignments	30%
Project	10%
Term test	25%
Final Examination	35%
Total	100%

Assignments (30%)

There are 10 assignments. Students are given one week to complete each assignment. One extra week will be given for late assignments with a daily five percent (5%) deduction; after which time, assignments will not be accepted. Unless prior arrangements are made with the instructor, or the instructor indicates otherwise, all assignments will be word-processed and submitted electronically using Moodle.

Project (10%)

Term projects will focus on developing statistical questions and answers with Yukon- and/or Canadian-based business, economic and community context. Students will be responsible for development of the questions, background, context and data for the question, describe the methods used in performing the analysis, and a final discussion of the results and conclusion. The goal of the project is to develop critical thinking skills and the ability to apply the knowledge and skills gained in this course to current, real-world business questions.

Term Tests (25%)

There will be one, 2 hour term test in this course. This term test will be held during regular class sessions, as indicated in the accompanying syllabus.

Final Examination (35%)

There will be a three-hour final examination. The exam will contain a short answer section, essay and/or numerical problem section and a lab component. Content will cover the entire semester. Details on this examination will be provided near the end of the term.

COURSE WITHDRAWAL INFORMATION

Refer to the YukonU website for important dates.

TEXTBOOKS & LEARNING MATERIALS

Keller, G. (2017): Statistics for Management and Economics Eleventh Edition: Cengage Learning, 458 pp. *Access to Excel is necessary.*

Resource: Holmes, H. (2017): Introductory Business Statistics: OpenStax, Rice University, 623 pp.

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations by contacting the Learning Assistance Centre (LAC): LearningAssistanceCentre@yukonu.ca.

TOPIC OUTLINE (Subject to Change)

Week	Date	Ch.	Topic
Week 1	05-Jan	1	Introduction to Statistics
Week 2	12-Jan	2	Graphical Descriptive Techniques I
	14-Jan		**Last day to add or change course**
Week 3	19-Jan	3	Graphical Descriptive Techniques II
Week 4	26-Jan	4	Numerical Descriptive Techniques
Week 5	02-Feb	4,4 & 5	Measures of Linear Relationship & Data Collection and Sampling
Week 6	09-Feb	6	Probability
Week 7	16-Feb	7	Random Variables and Discrete Probability Distributions
	23-Feb		**Reading Week** (no classes)
Week 8	02-Mar		**Midterm** (Chapters 1-6)
Week 9	09-Mar	8	Continuous Probability Distributions
	11-Mar		**Last day to withdraw from credit courses without academic penalty**
Week 10	16-Mar	9	Sampling Distributions
Week 11	23-Mar	10	Introduction to Estimation
Week 12	30-Mar	11	Introduction to Hypothesis Testing
Week 13	06-Apr		FINAL EXAM Review
	13-Apr		Exam period Begins
	15-Apr		**Easter Friday** (no classes)
	18-Apr		**Easter Monday** (no classes)