COURSE OUTLINE

MATH 210
APPLIED STATISTICS

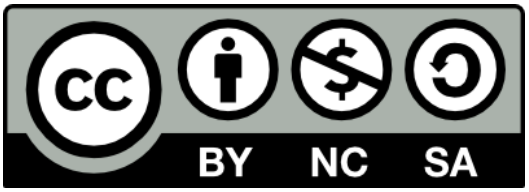
3 **CREDITS**

PREPARED BY: Lisa Kanary, Instructor
DATE: October 14, 2020

APPROVED BY: Ernie Prokopchuk, Interim Dean
DATE: November 11, 2020

APPROVED BY SENATE: Click or tap to enter a date
RENEWED BY SENATE: Click or tap to enter a date

DIVISION OF APPLIED SCIENCE AND MANAGEMENT
MATH210
Applied Statistics
3 Course Credits
Winter, 2021



MATH 210 – Applied Statistics

INSTRUCTOR: Lisa Kanary, PhD
OFFICE LOCATION: A2435
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TELEPHONE: (867) 668-8863

OFFICE HOURS: Monday 11am – 1pm
CLASSROOM: Zoom
TIME: Tuesday 10:00-11:55
DATES: January – April, 2021

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, hypothesis testing, and inference about a population and comparing two populations. Students will learn how to apply knowledge gained in these areas using statistical computer applications.

PREREQUISITES

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

RELATED COURSE REQUIREMENTS

None

EQUIVALENCY OR TRANSFERABILITY

This course is BCCAT transferable and recognized by the CPA.

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. Identify ANOVA and inferential statistics (correlation and regression).
9. 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.

ASSESSMENTS:

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%)

This group term project will focus on providing solutions for Yukon-based businesses and research groups using the knowledge and skills gained in this course. The plain language, real-world matter will be provided to the group, then it is the group's responsibility as a team to: develop the question, provide background and context for the activity, describe the methods used in performing the analysis, and finally to discuss the results and conclusion with the 'client'. The goal of the project is to develop team working skills, 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, one-and-a-half-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.

EVALUATION:

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

REQUIRED TEXTBOOKS AND MATERIAL

Keller, G. (2017): Statistics for Management and Economics Eleventh Edition: Cengage Learning, 458 pp.

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/ Admissions & Registration web page.

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when a student submits work for credit that includes the words, ideas, or data of others, without citing the source from which the material is taken. Plagiarism can be the deliberate use of a whole piece of work, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Students may use sources which are public domain or licensed under Creative Commons; however, academic documentation standards must still be followed. Except with explicit permission of the instructor, resubmitting work which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the University.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon University recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon University program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukonu.ca/yfnccr.

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. If a student requires an academic accommodation, they should contact the Learning Assistance Centre (LAC): lac@yukonu.ca.

TOPIC OUTLINE

Week	Date	Date	Ch.	Topic
Week 1	4-Jan	5-Jan	1	Intro to Statistics
Week 2	11-Jan	12-Jan	2	Graphical Descriptive Techniques I
	15-Jan			**Last day to add or change course**
Week 3	18-Jan	19-Jan	3	Graphical Descriptive Techniques II
Week 4	25-Jan	26-Jan	4	Numerical Descriptive Techniques
Week 5	1-Feb	2-Feb	5	Data Collection and Sampling
Week 6	8-Feb	9-Feb	6	Probability
Week 7	15-Feb	16-Feb	7	Random Variables and Discrete Probability Distributions
	22-Feb	23-Feb		**Reading Week** (no classes)
Week 8	1-Mar	2-Mar		**Midterm** (Chapters 1-6)
	5-March			**Last day to withdraw from credit courses without academic penalty**
Week 9	8-Mar	9-Mar	8	Continuous Probability Distributions
Week 10	15-Mar	16-Mar	9	Sampling Distributions
Week 11	22-Mar	23-Mar	10	Introduction to Estimation
Week 12	29-Mar	30-Mar	11	Introduction to Hypothesis Testing
	5-Apr	6-Apr		**Easter Monday** (no class) & Project Presentation
Week 13	12-Apr		14	ANOVA & FINAL EXAM Review