

**COURSE OUTLINE**

**MATH210**

**APPLIED STATISTICS**

3 **CREDITS**

PREPARED BY: Lisa Kanary, Instructor DATE: December 9, 2019

APPROVED BY: Stephen Mooney, Interim Dean DATE: December 19, 2019

APPROVED BY ACADEMIC COUNCIL: Click or tap to enter a date

RENEWED BY ACADEMIC COUNCIL: Click or tap to enter a date





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Academic Council, Governance Office

Academic Council MyYC: Policies, Procedures and Forms

**APPLIED STATISTICS**

**INSTRUCTOR:** Lisa Kanary, PhD  **OFFICE HOURS:** Monday 10:30am – 12:00pm

**OFFICE LOCATION:** A2435  **CLASSROOM:** Monday A2601 & Tuesday A2702

**E-MAIL:** [lkanary@yukoncollege.yk.ca](mailto:lkanary@yukoncollege.yk.ca)  **TIME:** Monday 2:30-4:25 & Tuesday 10:00-11:55

**TELEPHONE:** (867) 668-8863  **DATES:** January 6 – April 27, 2020

**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); and
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 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:**

**Hand-in Assignments (20%)**

There are 6 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 (15%)**

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 (40%)**

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:**

|  |  |
| --- | --- |
| Project | 15% |
| Assignments | 20% |
| Term test | 25% |
| Final Examination | 40% |
| Total | 100% |

**REQUIRED TEXTBOOKS AND MATERIAL**

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

Earlier editions of the microeconomics text should be fine for this course, but the instructor will be using the page references in the eleventh edition for any content references. Copies of earlier editions of the statistics text have been placed on reserve in the Yukon College library for your use. An electronic version of the textbook can be downloaded for a cost at:

<https://www.vitalsource.com/products/statistics-for-management-and-economics-xlstat-gerald-keller-v9781337516723>

Students will also require a business or scientific calculator.

**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 College.

**YUKON FIRST NATIONS CORE COMPETENCY**

Yukon College 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 College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see [www.yukoncollege.yk.ca/yfnccr](http://www.yukoncollege.yk.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 College Academic Regulations (available on the Yukon College website). It is the student’s responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC): lac@yukoncollege.yk.ca.

**TOPIC OUTLINE**

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| --- | --- | --- | --- | --- |
| **Week** | **Date** | **Date** | **Ch.** | **Topic** |
| Week 1 | 6-Jan | 8-Jan | 1&2 | Intro to Statistics and Graphical Descriptive Techniques I |
| Week 2 | 13-Jan | 15-Jan | 3 | Graphical Descriptive Techniques II |
|  | 17-Jan |  |  | ***Last day to add or change course*** |
| Week 3 | 20-Jan | 22-Jan | 4 | Numerical Descriptive Techniques |
| Week 4 | 27-Jan | 29-Jan | 5&6 | Data Collection and Sampling & Probability |
| Week 5 | 3-Feb | 5-Feb | 6 | Probability |
| Week 6 | 10-Feb | 12-Feb | 7 | Random Variables and Discrete Probability Distributions |
| Week 7 | 17-Feb | 19-Feb | 8 | Continuous Probability Distributions |
| Week 8 | 24-Feb | 26-Feb |  | ***Project Presentation and Midterm*** (Chapters 1-7) |
| Week 9 | 2-Mar | 4-Mar | 9 | Sampling Distributions |
|  | 6-Mar |  |  | ***Last day to withdraw from credit courses without academic penalty*** |
| Week 10 | 9-Mar | 11-Mar | 10 | Introduction to Estimation |
|  | 16-Mar | 18-Mar |  | ***Reading Week (no classes)*** |
| Week 11 | 23-Mar | 25-Mar | 11 | Introduction to Hypothesis Testing |
| Week 12 | 30-Mar | 1-Apr | 12 | Inference About a Population |
| Week 13 | 6-Apr | 8-Apr | 13 | Inference About Comparing Two Populations & FINAL EXAM Review |
|  | 13-Apr |  |  | ***Easter Monday (Holiday)*** |
|  | 27-Apr |  |  | ***Final Exam 9:00am - 12:00pm*** |