STAT 151A – Introduction to Applied Statistics
3 credits, 3 hours lecture, 2 hours lab (Every Other Week), 2 hours tutorial.

An introduction to descriptive statistics (including histograms, stem-and-leaf plots, and box plots), elementary probability, the binomial distribution, the normal distribution, sampling distributions and the central limit theory. An introduction to inferential statistics including estimation of population parameters and confidence intervals for means, hypothesis testing including both one and two sample tests, paired comparisons, one-way analysis of variance (ANOVA), chi-square test, correlation and linear regression analysis. Statistical analysis with an IBM software, Statistical Package for the Social Sciences (SPSS).

Prerequisites and/or co-requisites: Math30-1 or Math30-2

Instructor

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Office hours

Monday	11:00 – 11:50
Thursday	12:00 – 13:50
Friday	11:00 – 12:50

Hours of Instruction

Monday/ Wednesday/ Friday	14:00 – 14:50
Tuesday	14:00 – 15:50 (Labs/Tutorials)

Required Resources

Introductory Statistics: Exploring the World Through Data, Canadian Edition, ISBN 9780134213170, Gould, R., Ryan, C., Stallard, J., and Boué, M. (2018).

Electronic Devices: Ti-83/Ti-84/Ti-85 Calculator; Smartphone.

Course Outcomes

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

- employ descriptive statistics including computation of the mean, median, mode, variance and standard deviation of a given data set as well as construction of histograms, stem-and-leaf plots, and box plots.
- determine the probability of any given event based on possible occurrences.
- apply the discrete and continuous probability distributions including the binomial distribution, the normal distribution, sampling distributions and the central limit theory.

- employ inferential statistics encompassing hypothesis testing, ANOVA, chi-square test, correlation and linear regression analysis.
- conduct statistical analysis using SPSS.

Evaluation

Assessment	Weight
Assignments	5%
iDeinas	5%
Pop Quizzes	10%
Labs & Tutorials	10%
Midterm Exam 1	15%
Midterm Exam 2	15%
Final Exam	40%
TOTAL	**100%**

A grade of C- is required for progression or transfer.

Assignments

Assignments are conducted online and as such access to MyLab Statistics is mandatory. Students receive access codes to this application with the purchase of the course textbook from Keyano College bookstore. If you decide to purchase a course textbook from elsewhere, then ensure that you get an access code for MyLab Statistics from Keyano College bookstore. Your instructor will go over the instructions during the first lecture. Assignments must be completed via the MyLab Statistics web site before the posted due dates. As well this access is required for tutorials and other tests. The assignments cover chapters learned in class.

You will be allowed to rework assignments after the due date but only for practice purposes; this will have no effect on your score. Missed or incomplete assignments may result in a grade of F for the course. It is advisable to start working on assignments right away without postponing till the deadline.

iDeinas (independently Done Employing Insights Newly Acquired)

iDeinas are closed-book 5-minute multiple choice questions independently Done Employing Insights Newly Acquired by students. Resident on iLearn, iDeinas will be done using an iPhone or any other smartphone. These will be conducted in class at the end of every lecture to test students' comprehension and participation. Students will be required to install MOODLE app on their smartphones. For every iDeina there will be at least one multiple choice question to be done in 5 minutes and you will be allowed two attempts and the final score will be the average of the outcomes of the two attempts.   iDeinas are Question Banks created on iLearn for iPhone and other smartphones. iDeinas cover Chapters 1-12.

iDeinas will be treated as micro-exams and as such students are supposed to independently do without discussing or getting help from each other. Students found in breach will be tantamount to plagiarism. Students will be given access to review iDeinas after the lecture except for gaining practice. However, this effort will not enhance the score of that particular iDeina. As iDeinas test your comprehension and participation, any missed iDeina due to absence will be awarded a score of zero unless a valid reason is given for that behavior in punctuality. It is important to prepare and plan for the class and punctuality.

Pop Quizzes

Pop Quizzes will be impromptu open-book brief tests covering chapters completed prior to the week of the quiz. The structure of the 15-20-minute Pop Quiz will be a hybrid of multiple choice and direct answer questions. The Pop Quizzes provide students with a variety of statistical problems related to the material covered in the lectures. Marks will be based on accurate statistical analyses and on the interpretation of the results of the statistical analyses. Students need to bring a Ti-83/Ti-84/Ti-85 calculator, pencils, and an eraser.

Tutorials

Just like the assignments tutorials are conducted online via MyLab Statistics. Tutorials which will be conducted every other week are designed to provide additional practice and help you develop your problem solving skills by working out completely selected online problems under the guidance of your instructor. Tutorials are due at the end of the tutorial period, unless otherwise indicated. You are expected to work on tutorial problems by yourself, though you may discuss your work with your instructor or a classmate; collaborative solutions are not allowed unless explicitly stated by your instructor.

Labs

In the real world, most statistical analyses are conducted using computer software. This is one of the industry standards for analyzing statistics and as such we will be employing SPSS in this course. There are five labs that are designed to introduce students to the main features of data organization and analyses (both descriptive and inferential). The labs serve to demonstrate how data analyses covered in the course can be conducted with the statistical software. Labs are conducted every fortnight sequence. In the first week of the lab sequence, students are introduced to the relevant analyses and given the opportunity to ask the instructor questions. All labs must be completed before the posted due date.

Midterm Exams (1 & 2)

There will be two midterm exams. First midterm exam will be online via MyLab Statistics and will cover Chapters 1-5. The structure of the first midterm will be a hybrid of multiple choice and direct answer questions. The second midterm exam will be closed book, paper-based, hand-written and will cover chapters 6-10. The structure of the second midterm will be a series of long questions. Both exams provide students with a variety of statistical problems related to the material covered in the lectures. Marks will be based on accurate statistical analyses and on the interpretation of the results of the statistical analyses. Students need to bring a Ti-83/Ti-84/Ti-85 calculator, pencils, and an eraser.

Final Exam

The final exam will be closed book, paper-based, hand-written and will cover the entire semester, i.e., Chapters 1-12. The structure of the final exam will be similar to those of the midterm exams. This will

comprise of a batch of multiple choice and a series of long questions to be completed. Marks will be based on accurate statistical analyses and on the interpretation of the results of the statistical analyses. Students need to bring a Ti-83/Ti-84/Ti-85 calculator, pencils, and an eraser.

Grading System

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
	B	3.0	74 – 76.9	
	B-	2.7	70 – 73.9	
Satisfactory	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
Progression	C-	1.7	60 – 63.9	
Poor	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
Minimum Pass	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

Proposed Schedule of Topics

Week	Main Topic	Chapter	Assignments/Lab/Tutorial
1	Introduction to data & Visualizing Data	1, 2	Assignment#1 Tutorial#1
2	Numerical Summaries of Centre and Variation	3	Assignment#2 Lab#1 - Displaying and Describing Distributions
3	Regression Analysis: Exploring Relationships between Variables	4	Assignment#3 Tutorial#2
4	Modelling Variation with Probability	5	Assignment#4 Lab#2 - Linear Regression and Correlation
5	**Midterm Exam 1:** Online under MyLab Stat	1-5	
6	Modeling Random Events: The Normal and Binomial Models	6	Assignment#5 Tutorial#3
7	Survey Sampling and Inference: CLT for proportions and means (Include Sections 9.1-9.2)	7, 9	Assignment#6 Lab#3 - Inferences for One-Sample
8	Hypothesis Testing for Population Proportions	8	Assignment#7 Tutorial#4
9	Inferring Population Means	9	Assignment#8 Lab#4 - Inferences for Two-Sample
10	Relationships between Categorical Variables	10	Assignment#9
11	**Midterm Exam 2:** Written Exam	6-10	
12	Comparing Several means: One-Way Analysis of Variance	11	Assignment#10 Lab#5 - One-way Analysis of Variance
13	Design of Experiments and Sampling	12	Assignment#11
14	Review	1-12	
15	**Final Exam:** Written Exam	1-12	

Please Note:
Date and time allotted to each topic is subject to change.

Performance Requirements

Student Responsibilities

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College credit calendar. The Keyano College credit calendar also has information about Student Rights and Code of Conduct. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Code of Conduct Policies.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and notes that may be due.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own;
- The use of unauthorized aids in assignments or examinations (cheating);
- Collusion or the unauthorized collaboration with others in preparing work;
- The deliberate misrepresentation of qualifications;
- The willful distortion of results or data;
- Substitution in an examination by another person;
- Handing in the same unchanged work as submitted for another assignment; and
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found on ilearn.keyano.ca. Then print the certificate, sign it, and show it to each of your instructors. Your course work may not be graded until you show this signed certificate.

Specialized Supports

The Student Services department is committed to Keyano students and their academic success. There are a variety of student supports available at Keyano College. Due to the continuing situation with the Covid-19 pandemic, the offered support services will be implemented differently this semester by being provided mostly virtually. In-person service can be requested as needed. All Alberta Health Services guidelines will be followed for in-person appointments—wear a mask, maintain two meters of physical distance, use hand sanitizer, and stay home if you are unwell.

All student services are available during Keyano business hours: Monday to Friday, 8h30-16h30.

The Library has evening and weekend hours. Please check keyano.ca/library for current hours.

Accessibility Services: provides accommodations for students with disabilities. Students with documented disabilities, or who suspect a disability, can meet with a Learning Strategist to discuss their current learning barriers and possible accommodations. Students who have accessed accommodations in the past are encouraged to contact us to request them for the semester. Please note that requesting accommodations is a process and requires time to arrange. Contact us as soon as you know you may require accommodations. For accessibility services supports and to book a virtual appointment, please contact accessibility.services@keyano.ca.

Accessibility Services also provides individual and group learning strategy instruction for all students, as well as technology training and supports to enhance learning. Meet with a Learning Strategist to learn studying and test-taking strategies for online classes. Schedule an appointment with the Assistive Technology Specialist to explore technology tools for learning. Book an appointment today by emailing accessibility.services@keyano.ca

Academic Success Coaching: offers you support and access to resources for your academic success to help you to find the Keys to your Success. The Academic Success Coach will work with you to develop an academic success plan, develop your study and time management skills, and connect you with the right resources here at Keyano. Academic.success@keyano.ca is the best way to access resources during virtual service delivery.

Wellness Services: offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators offer a safe and confidential environment to seek help with personal concerns. All individual appointments will continue virtually.

Wellness Services welcomes students to participate in any of the virtual group sessions offered throughout the academic year addressing topics including mindfulness and test anxiety.

Individual virtual appointments can be made by emailing wellness.services@keyano.ca.

Library Services: provides students with research and information supports as they engage in their studies. Library staff are available to support you both virtually and in person during the fall semester. For library service supports and inquiries, please email askthelibrary@keyano.ca.

Individual support with the Information Librarian will be provided virtually. Appointments can be requested by email or by placing a Book a Librarian request using the online form found here.

Research and Subject Guides are helpful resources when conducting research or addressing your information needs. To view a subject or course specific guide, use the following Subject Guides link

To access additional research resources, including Citation Guides (APA, MLA, Chicago, or IEEE), go to the Research Help Library page.

Skill Centre: provides academic support services to students registered in credit programs at Keyano College in the form of tutoring, writing support groups, facilitated study groups, workshops and study space. Tutoring services are **free** to Keyano students. Tutoring is available for Math, Writing, English, and Science subject areas.

While most courses are being offered online, the Skill Center will be offering mostly virtual tutoring services and in-person sessions as requested. Please email Skill.centre@keyano.ca to get in contact with our tutoring staff.

For the most up to date information on how to book a tutoring session, please view the Keyano Skill Centre homepage.

E-Learning

Technology and internet will impact your online learning experience. It's important that you are able to watch an online video and other course materials, take online quizzes, and participant in a live class with your instructor and other students.

Keyano College operates in a Windows based environment and having the correct tools for online learning is important. Here's a list of recommended system requirements for Fall 2020.

Internet Speed

Minimum Internet speeds of 5 Mbps.
Recommended Internet speeds of 25 Mbps (especially if you are sharing your internet at home).
Check your internet speed with Fast.com.

System requirements:

Microsoft Windows	Apple
Minimum Requirements: A Windows 10 **computer/laptop** · Minimum 4GB of RAM. · 10GB+ available hard drive storage. · Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). Microsoft Office software is free to all Keyano students and employees. · Microphone, webcam and speakers. A headset with a microphone is recommended. · System updates must be regularly installed. · Anti-Virus / Anti-Malware software	**Minimum Requirements:** A Macintosh (V10.14 and above) **computer/laptop** · Minimum 4GB of RAM. · 10GB+ available hard drive storage. · Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). Microsoft Office software is free to all Keyano students and employees. · Microphone, webcam and speakers. A headset with a microphone is recommended. · System updates must be regularly installed. · Anti-Virus / Anti-Malware software.
Recommended Requirements · 8GB of RAM · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.	**Recommended Requirements** · 8GB of RAM · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.

Chromebooks are **not** recommended as they are not compatible with testing lockdown browsers.

A Microsoft Surface or iPad or iPad Pro may be possible alternatives in some program areas.

Specific department requirements:

Business and OA programs require Windows 10.

Other programs may utilize Windows based tools as well.

Computer Software

Students will be able to get access to Microsoft Office 365 for Free using Keyano Credentials by clicking here.

Recording of lectures and Intellectual Property

Students may only record a lecture if explicit permission is provided by the instructor or by Accessibility Services. Even if students have permission to record a lecture or lecture materials, students may not publish any of the lectures or lecture materials, this includes any recordings, slides, instructor notes, etc. on any platform. Thus no student is allowed to publish or sell instructor notes without formal written permission. It is important to recognize that the Canadian Copyright Act contains provisions for intellectual property.

ITS Helpdesk

If you are having issues with your student account, you can contact the ITS Helpdesk by emailing its.helpdesk@keyano.ca or calling 780-791-4965.

Please watch your Keyano email for workshop announcements from our Student Services team.