



Course Outline

UNIVERSITY STUDIES

**Statistics 151
Introduction to Applied Statistics I
Fall, 2013**

**3 CREDITS
3 HOURS LECTURE and 1.5 HOURS LAB PER WEEK**

INSTRUCTOR: Louis Dingley

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OFFICE NUMBER: 245A

OFFICE HOURS:

Tuesday	2:00 – 3:00 PM
Wednesday	9:00 – 11:00 AM
Thursday	1:00 – 3:00 PM

HOURS OF INSTRUCTION:**Lectures**

Monday	2:00 – 2:50 PM	Room 228
Wednesday	2:00 – 3:50 AM	Room 228

Labs

Monday	3:00 – 4:50 AM	Room S205 (Stat 151X)
Tuesday	2:00 – 3:50 AM	Room S205 (Stat 151Y)

COURSE DESCRIPTION:

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, chi-square test, correlation and linear regression analysis.

PRE-REQUISITE(S):

Math 30-1 or Math 30-2

COURSE OUTCOMES:

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

- apply descriptive and inferential statistics.
- competently use statistical computer software.

ECO CANADA ENVIRONMENTAL COMPETENCY OUTCOMES:

The student will gain the:

- Ability to collect samples and data for environmental purposes (#12)
- Ability to analyze and interpret environmental samples and data (#13)
- Ability to implement/monitor sustainable development strategies and programs (#17)
- Ability to conduct studies related to ecosystem and habitat preservation and/or management of natural resources #24)

- Ability to monitor/evaluate effectiveness of programs and practices related to ecosystem and habitat preservation and/or management of natural resources (#26)
- Ability to conduct environmental research and publish results (#31)

ECO CANADA TRANSFERABLE COMPETENCY OUTCOMES:

The student will develop and apply skills in the following transferable competencies:

- Professional ethics & work style (#1)
- Communicating effectively (#3)
- Collaboration (#4)
- Critical thinking & judgment (#5)
- Planning and organizing work and projects (#6)

REQUIRED RESOURCES:

Agresti, A. and Franklin, C. (2012). *The art and science of learning from data*, 3rd ed. New York: Freeman.

TOPICS TO BE COVERED:

Please Note: This course outline may be modified to facilitate unforeseen time constraints.

Syllabus

Part I: Gathering and Exploring Data	
September 4	Chapter 1 - Statistics: The art and science of learning from data
September 9, 11	Chapter 2 - Exploring data with graphs and numerical summaries
September 16, 18	Chapter 3 - Association: Contingency, correlation, and regression
September 23, 25	Chapter 4 - Gathering data
Part II: Probability, Probability Distributions, and Sampling Distributions	
September 30, October 2	Chapter 5 - Probability in our daily lives
October 7, 9	Chapter 6 - Probability distributions
October 16	Midterm Exam – Chapters 1, 2, 3, 4, 5, 6
October 21, 23	Chapter 7 - Sampling distributions
Part III: Inferential Statistics	
October 28, 30	Chapter 8 – Statistical Inference: Confidence Intervals
November 4, 6	Chapter 9 – Statistical Inference: Significance test about hypotheses
November 13, 18	Chapter 10 - Comparing two groups
Part IV: Analyzing Associations and Extended Statistical Methods	
November 20, 25	Chapter 11 - Analyzing associations between categorical variables
November 27, December 2	Chapter 14 - Comparing Groups: Analysis of Variance
December 4	Review for Final Exam
December 9 – 18	Final Exam

MOODLE

Go to <http://ilearn.keyano.ca>

This course is supported through Moodle. Assignments, readings and handouts will be posted on Moodle. Login information will be provided by your instructor.

EVALUATION:

Evaluation	Percent	Due Date
Homework Assignments	10%	See section below
Lab Assignments	10%	See section below
Midterm Exam	30%	October 16
Lab Exam	10%	November 25, 26
Final Examination	40%	TBA – Dec. 9 to 18*

* - **Do not make holiday plans until the final exam dates are announced.**

Homework Assignments

In order to master the statistical concepts discussed in the course, students need to apply their learning by solving problems. Statistics is learned by doing. In order to ensure students do the minimal amount of practice, five homework assignments are provided. Each homework assignment has problems drawn from the textbook chapters covered in the course. Students are strongly encouraged to do more problems than assigned. The greater the number of problems you work on, the greater the likelihood of mastering the course material. If you have any questions regarding homework assignments, please contact the instructor.

Assignment	Chapters	Due Dates
1	1, 2, 3	September 23
2	4, 5	October 7
3	6, 7	October 28
4	8, 9,10	November 20
5	11, 14	December 2

Lab Assignments

In the real world, most statistical analyses are conducted using computer software. In this course we will be using one of the industry standards for analyzing statistics: IBM SPSS (Statistical Package for the Social Sciences). Four labs are designed to introduce students to the main features of data organization and analyses (both descriptive and inferential). The labs provide statistical problems related to the material covered in the course lectures and will serve the purpose of reinforcing this learning as well as demonstrating how the analyses can be conducted with the statistical software. Labs run on two-week cycles. In the first week of the lab cycle, students are introduced to the relevant analyses. The second week of the cycle provides students with the opportunity to complete the lab with the instructor available to answer questions. Students who complete the lab before the second week do not need to come to the second week of the lab. However, it is recommended that those students come to the lab session and work on their homework assignments while the instructor is present to answer questions.

Lab	Topic	Due Date *
1	Displaying and Describing Distributions	September 23, 24
2	Linear Regression and Correlation	October 7, 8
3	Inferences for one and two-sample problems	October 28, 29
4	One-way Analysis of Variance	November 18, 19
	Lab Exam	November 25, 26

* - There will be no labs on October 14 and 15 and November 11 and 12.

Midterm Exam

The midterm exam presents students with a variety of statistical problems related to the material covered in Chapters 1 through 7. Marks will be based on accurate statistical analyses and on the interpretation of the results of the statistical analyses. Students will be provided with the necessary Statistical Tables (such as the Z Table) and relevant statistical formulae. Students need to bring a calculator, pencils, and an eraser.

Lab Exam

In the second last week of the course students will write a lab exam in their lab periods. The lab exam will be of similar format to the lab assignments, whereby students will be provided with a data set and a series of questions to answer. Statistical analyses will be conducted using SPSS and the lab exam (written in Microsoft Word) will be submitted by the end of the lab period. Students need to be able to do all data management and statistical analyses they learned during the lab section of the course.

Final Exam

The final exam will be given in the examination week (December 9 through 18). The final exam will be of similar format to the midterm and consist of a series of statistical problems to be solved. Marks will be based on accurate statistical analyses and on the interpretation of the results of the statistical analyses. The primary focus of the final exam is on the material covered since the midterm. However, students are expected to know all course material as aspects of what is learned during the first half of the course is necessary for performing statistical analyses learned in the second half. Students will be provided with the necessary Statistical Tables (such as the Z Table) and relevant statistical formulae. Students need to bring a calculator, pencils, and an eraser.

GRADING SYSTEM:

Letter Grade	Description	Grade Points
A+		4
A	Excellent	4
A-		3.7
B+		3.3
B	Good	3
B-		2.7
C+		2.3
C	Satisfactory	2

C-		1.7
D+		1.3
D	Minimal Pass	1
F	Failure	0

Students intending to transfer to other institutions should strive for a ‘C-’ as a minimum. Transfer information on each course is available at the [Alberta Council on Admission and Transfers](#).

If all assignments are not completed the student will receive a grade of F.

Students should consult:

http://www.keyano.ca/current_students/examinations/index.htm

IMPORTANT DATES:

September 17, 2013	Courses dropped after this date will be designated “W”. (A withdrawal (W) is not reflected in your GPA)
October 16, 2013	Mid-term examination
October 25, 2013	Courses dropped after this date will be designated “WF”. (A withdrawal failure (WF) counts as a 0 in your GPA calculation)
December 6, 2013	Last day of classes
December 9 to 18, 2013	Final Exams

COLLEGE POLICIES

Equality, Equity and Respect

The Keyano College is committed to providing an environment of equality, equity and respect for all people within the College community. All members of this community are considered partners in developing teaching and learning contexts that are welcoming to all. Faculty, staff, and students are encouraged to use inclusive language to create a classroom atmosphere in which students' experiences and views are treated with equal respect and valued in relation to their gender, ethnic and cultural background, and sexual orientation.

Students should consult:

http://www.keyano.ca/Committees/IRA/Individual_Rights_Policy.asp

Plagiarism and Cheating

Every student expects to be treated and evaluated fairly in a course. Plagiarism and cheating robs everyone of this right.

No student may submit words, ideas or data of another student or person as his or her own in any writing, project, assignment, quiz, electronic presentation, exam etc. Any work used that is not the student's own must be clearly cited as belonging to someone else. There are penalties for

using other's work and not citing it. The Student's Rights & Responsibilities document clearly outlines these penalties and the appeal process.

- No learner can obtain information from another student during an exam.
- No learner can bring unauthorized information (paper or electronic) into an exam or quiz.
- No student can submit work done in another course for grading in this course without the written prior approval of the course instructor.
- No student can submit copyright protected or commercially produced materials as part or all of an assignment without proper citation & permission.

Student Rights & Responsibilities

Students should consult the Keyano College Credit Calendar or online at:

<http://www.keyano.ca/Media/Collections/Calendars/Keyano.Calendar1112-10-full.pdf>

Specialized Supports and Duty to Accommodate

Disability Support Services: Learner Assistance Program

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

Specialized Supports and Duty to Accommodate

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation, and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.



Course Outline

UNIVERSITY STUDIES

**Statistics 151
Introduction to Applied Statistics I
Fall, 2013**

**3 CREDITS
5 HOURS PER WEEK**

Louis Dingley, Instructor

Date

Reviewed and approved by:

Guy Harmer, Dean

Date