LOYOLA UNIVERSITY CHICAGO

Water Tower Campus
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QUINLAN SCHOOL OF BUSINESS ADMINISTRATION

**ISSCM 241-101 Business Statistics**
**Spring 2018, TTh 2:30 – 3:45 pm**
**Schreiber Center Room 405**

**Instructor**: Faruk Guder
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**Office:** Schreiber Center 704
**Office Phone**: 312-915-7062
**Office Hours**: 1:00-2:15 Tu and Th
and 4:00-5:30 Th or by appointment

**Course Description**:
The fundamentals of managerial statistics are presented. Topics may include descriptive statistics, random variables, probability distributions, estimation, hypothesis testing, regression, and correlation analysis. Statistical software is used to assist in the analysis of these problems.

**Course Overview**:
This purpose of this course is to provide students with statistical tools needed by managers. The course emphasizes understanding the process associated with statistical decisions, defining and formulating problems, analyzing the data, and using the results in decision making. Students who have laptops with Excel are invited to bring them to class.

**Course Objectives and Learning Outcomes**
Students will be able to demonstrate understanding of statistical thinking and data analysis techniques for decision-making under uncertainty.
Students will be able to apply statistical techniques to data sets, and correctly interpret the results.
Students will be able to analyze and apply computer-generated statistical output to solve problems.

**Required Materials**
OpenIntro Statistics, 3rd Edition, by Diez, Barr and Cetinkaya-Rundel. ISBN: 9781943450039
This book can be downloaded free as a pdf at https://www.openintro.org/stat/textbook.php or purchased in paperback format on Amazon for around $15.

**Attendance**
Class attendance is mandatory and essential to the value of the learning experience. Students are expected to attend all class sessions in order to pass the course

In the event unavoidable emergencies or conflicts prevent you from attending class, please notify the instructor by e-mail prior to missing the class, and request options for covering missed material. Most of the subjects in a course are sequential. Therefore, it is important to understand the material covered in the missed class before the next class.

**Make-Up Examinations/Assignments**

Because Quinlan faculty believe examinations represent a critical component of student learning, required examinations should be taken during the regularly scheduled class period.

**Make-up examinations are discouraged**. Exceptions may be granted only by the faculty member or department chair, and only for unavoidable circumstances (illness verified by a signed physician's note, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, or religious observance). A make-up final examination may be scheduled only with the permission of the appropriate Quinlan Assistant or Associate Dean.

**Academic Integrity**
All members of the Quinlan School shall refrain from academic dishonesty and misconduct in all forms, including plagiarism, cheating, misrepresentation, fabrication, and falsehood…Plagiarism or cheating on the part of the student in individual or group academic work or in examination behavior will result minimally in the instructor assigning the grade of "F" for the assignment or examination. In addition, all instances of academic dishonesty must be reported to the chairperson of the department involved.

For further information about expectations for academic integrity and sanctions for violations, consult the complete Quinlan School of Business Honor Code and Statement of Academic Integrity on the Quinlan website:
http://www.luc.edu/media/lucedu/quinlanschoolofbusiness/pdfs/Honor-Code-Quinlan-July2012.pdf

**Course Website:**
Most of the course materials (syllabus, announcements, lecture notes, homework assignments, solutions to homework problems, etc.) will be posted on the course website at Loyola Sakai Learning Management System (Sakai).

**Week by Week Course Outline**
Classes will meet on Tuesday and Thursday 2:30-3:45 pm at the Water Tower Campus in Schreiber Center - Room 405. A list of the topics is shown on the next page.

## Week by Week Course Outline

| Week | Date/Day | Topic | Chapter | Notes |
|---|---|---|---|---|
| 1 | Jan 16, 18 | Introduction to Data – Data Basics, Collection, Sampling, Observations Experiments | 1 | |
| 2 | Jan 23, 25 | Examining numerical data<br>– Graphical Presentation (plots, histogram for frequency distribution…)<br>- Numerical Presentation (Mean, Median, Mode, Range, Standard deviation, variance)<br>Examining categorical data – Contingency Tables (Using pivot tables) | 1 | Skip pp. 46-54 |
| 3 | Jan 30, Feb 1 | Probability | 2 | Skip pp. 108-112 |
| 4 | Feb 6, 8 | Distributions of Random Variables<br>-Normal distribution<br>-Central Limit Theorem (pp 171-173, pp 194-197) | 3<br>4 | Skip pp. 141-157 |
| 5 | Feb 13, **15** | Review of Weeks 1-4<br>**Feb 15 - Midterm Exam I (Weeks 1-4)** | 1, 2, 3, 4 | |
| 6 | Feb 20, 22 | Foundations for Inference<br>- Central Limit Theorem (Review) (pp. 171-173, pp 194-197)<br>- Estimation of the population mean (point estimate, confidence interval estimate) (pp 174-180) | 4 | |
| 7 | Feb 27, Mar 1 | Foundations for Inference – Hypothesis Testing (pp 180-185) | 4 | Skip pp. 199-202 |
| | Mar 6, 8 | Spring Break, No classes | | |
| 8 | Mar 13, 15 | Inference for Numerical Data (when Population is not normally distributed, sample size is small)<br>- One-sample t-confidence Intervals<br>- One-sample t-tests<br>- Difference between two means (two-sample tests) | 5 | Skip 228-230<br>Skip pp. 240-246 |
| 9 | Mar 20, 22 | Inference for Categorical Data<br>- Population proportion (estimation & hypoth Test)<br>- Difference between two proportions | 6 | Skip pp. 286-311 |
| 10 | Mar 27, **29** | Review of Weeks 6, 7, 8, 9<br>**March 29 - Midterm Exam II (Weeks 6-9)** | 4, 5, 6 | |
| 11 | Apr 3, 5 | Introduction to Linear Regression<br>- Fitting a line by Least squares regression<br>- Testing the significance | 7 | |
| 12 | Apr 10, 12 | Multiple Regression | 8 | |
| 13 | Apr 17, 19 | Multiple Regression | 8 | |
| 14 | Apr 24, 26 | Special Issues in Regression<br>Dummy Variables, Nonlinear Regression, Model Building<br>– Review of all coverage (Weeks 1-14) | 8 | |
| | | **Saturday May 5, 2018, 4:15-6:15 Final Exam (Weeks 1-14)** | | |

**Please note:** This class may occasionally deviate from the course outlined above. The instructor reserves the right to make changes as needed to the course syllabus.

**Homework Assignments**

| Assignment | Due Date | Homework | Chapter | Notes |
|---|---|---|---|---|
| Homework 1 | January 30, 2018 | Given under **Tests & Quizzes** | 1 | 5 pts |
| Homework 2 | February 6, 2018 | Given under **Tests & Quizzes** | 2 | 2 pts |
| Homework 3 | February 13, 2018 | Given under **Tests & Quizzes** | 3, 4 | 4 pts |
| Homework 4 | February 27, 2018 | Given under **Tests & Quizzes** | 4 | 2 pts |
| Homework 5 | March 13, 2018 | Given under **Tests & Quizzes** | 4 | 2 pts |
| Homework 6 | March 20, 2018 | Given under **Tests & Quizzes** | 5 | 3 pts |
| Homework 7 | March 27, 2018 | Given under **Tests & Quizzes** | 6 | 2 pts |
| Homework 8 | April 10, 2018 | Given under **Tests & Quizzes** | 7 | 6 pts |
| Homework 9 | April 17, 2018 | Given under **Tests & Quizzes** | 8 | 3 pts |
| Homework 10 | April 24, 2018 | Given under **Tests & Quizzes** | 8 | 1 pt |

**Course Requirements and Grading Criteria**

Your final course grade will be determined by adding together the points you earn from each of the course requirements.

1. Two midterm exams (15 points each) and a Final exam (40 points) will be given during the semester. These exams will be in-class and closed book exams. You are required to take exams during the time specified for this section. Mark your calendar today to make sure that you do not have any conflicts with any of the exams! **There are no makeup exams**. Exception will be made under unusual circumstances only if the student has obtained prior permission from the instructor.
2. Homework assignments (quizzes) are given under the Tests & Quizzes page on the course website. They need to be submitted by 2:20 pm on their due dates listed above. The total homework/Quiz score is 30 points. Late submission is not accepted.

**Requirements and Grading Criteria**

| | Points |
|---|---|
| Homework/Quizzes | 30 |
| Exam 1 (midterm I) | 15 |
| Exam 2 (Midterm II) | 15 |
| Final Exam | 40 |
| Total | 100 |

3. Course Grading Scale

**Course Grading Scale**

| Grade | Total Points |
|---|---|
| A | 93.0 - 100.0 |
| A- | 90.0 - 92.99 |
| B+ | 87.0 - 89.99 |
| B | 83.0 - 86.99 |
| B- | 80.0 - 82.99 |
| C+ | 77.0 - 79.99 |
| C | 73.0 - 76.99 |
| C- | 70.0 - 72.99 |
| D+ | 67.0 - 69.99 |
| D | 60.0 - 66.99 |
| F | Less than 60 |