Instructor:	Joseph F. Wagner, SJ	**Class Meetings:**	Room TBD
Office:	127		MW: 10:30-11:45
		Email:	jwagner9@luc.edu

Office Hours: MT 2:00-3:00, WR 12:00-1:00
Also available by drop-in, appointment, or chocolate.

Required text

Diez, D., Çetinkaya-Rundel, M., & Barr, C. D. (2019). *OpenIntro Statistics, 4th ed.* This book may be downloaded as a free PDF (or for a small contribution) at openintro.org/os. The book is also available for purchase as a paperback on Amazon.

Course description

We will examine the fundamentals of managerial statistics. Topics may include descriptive statistics, random variables, probability distributions, estimation, hypothesis testing, regression, and correlation analysis. Microsft *Excel* will be used to assist in the analysis of these topics.

Course overview

The purpose of this course is to provide students with statistical tools needed by managers. The course emphasizes understanding the processes associated with statistical decisions, defining and formulating problems, analyzing the data, and using the results in decision making. Students should have a copy of *Excel* on their laptops to complete data labs and help with homework exercises.

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.

Technology

We live in a world in which technology plays a vital role, and the availability of computers eases our ability to work with large sets of numbers, the heart of statistical data. Because of this, we will regularly make use of Microsoft *Excel* as well as a handheld calculator. The calculator may be useful, but it is not essential for this course. I encourage you to think of both the calculator and *Excel* as always-available tools for your use on all assignments. Calculators will be permitted on all exams. One word of warning: This is a course in Statistics, not on the calculator or *Excel*. We *will* discuss how to use both for the statistical techniques of interest to us, but basic calculator and computer literacy on your part is expected at this point in your academic careers.

Mathematics is a social activity

Working together, both with me and with one another, will be emphasized (and at times required) in this class. Working with others has the (sometimes uncomfortable) effect of "stretching" us—sometimes to articulate ourselves better, sometimes to realize the limits of our understandings, sometimes to understand how someone else may approach a problem very differently. In addition to working together in class, you are encouraged to find study partners or to form study groups outside of class. If you've ever tried to learn a second natural language, you know that coming to understand what you read and hear is often considerably less difficult than expressing yourself orally and in written word. So, too, with mathematics.

Course administration and communication

Most course materials will be posted on the course website at Loyola Sakai Learning Management System (Sakai).

I will also send email to you as a class. It will be important for you to check your Loyola email and the course website regularly. Unless the JFRC itself experiences a system crash, there will be no excuse for not having up-to-date knowledge of course announcements, assignments, etc.

Reading & Homework

Reading and homework assignments, both written and computer-based, will be announced and made available on the course web-site, and they will be due **in class** on the date indicated on each.

Assignments must be neat, legible, preferably written in pencil, and stapled. Loose pages or sloppily prepared work that looks like scratch-paper will *not*, I repeat NOT, I repeat ***NOT*** be accepted. (If submitted, they will be returned to you ungraded.) Late homework will *not* be graded, however I will drop your two lowest *completed* homework scores in computing your final grade. An assignment completed and turned in late will be awarded a zero, but it may be dropped. Scores of zero for assignments not turned in or considerably incomplete may not be dropped.

Homework assignments will be graded on a 10-point scale and judged according to the overall completeness and quality of the work and the close grading of *two* selected problems from each assignment. The selected problems will be worth two points each; the remaining six points are awarded for overall completeness of the assignment, use of appropriate mathematical notation, neatness, legibility, etc.

Exams

There will be two regular exams and a semi-comprehensive final exam. The two regular exams are *very tentatively* scheduled for Wednesday, October 4 and Wednesday, November 8. A regular exam may be taken at an alternate time *only* for very good reasons (by my definition), and, except in cases of emergency, *only* if arrangements are made in advance. The time of the final exam will be determined by the JFRC and except in extraordinary circumstances, it cannot be taken at a different time.

Grading

Your final grade will be based on the following point-distribution:

Homework	150 points
Participation and class work	75 points
Two regular exams	500 points
Final exam	275 points

Letter grades will be assigned according to the following scale: A/A- (900-1000 pts), B/B± (800-899 pts), C/C± (650-799 pts), D (500-649 pts), F (< 500 pts). I reserve the right to make it easier—but not more difficult—to earn a particular grade. Plus/minus grades reflect *approximately* the top and bottom 20 points of each the above ranges, respectively. I do not intend to use the grade of D+.

There is one possible exception to the above grading policy: In order to earn a particular letter grade for the course, you must have earned that letter grade or higher on at least one of the three course exams.

Academic integrity

Loyola University Chicago takes seriously the issues of plagiarism and academic integrity. Below is an excerpt from the university's statement on academic integrity:

> The faculty and administration of Loyola University Chicago wish to make it clear that the following acts are regarded as serious violations of personal honesty and the academic ideal that binds the university into a learning community:
>
> Submitting as one's own:
>
> 1. Material copied from a published source: print, internet, CD-ROM, audio, video, etc.
>
> 2. Another person's unpublished work or examination material.
>
> 3. Allowing another or paying another to write or research a paper for one's own benefit.
>
> 4. Purchasing, acquiring, and using for course credit a pre-written paper.
>
> The critical issue is to give proper recognition to other sources. To do so is both an act of personal, professional courtesy and of intellectual honesty.

You are encouraged to work and study with other students in class and to learn from one another as opportunities provide. However, turning in the work of another, collaborating on assignments when prohibited, or providing your work to someone else will be considered academically dishonest. It is my practice to handle such cases with the severest penalties possible.

Attendance policy

In accordance with the JFRC mission to promote a higher level of academic rigor, all courses adhere to the following absence policy. Prompt attendance, preparation and active participation in course discussions are expected from every student. *For all classes meeting twice a week, students cannot incur more than two absences.* Thus a total of 2 absence(s) will be permitted. Additional absences beyond these will result in 1% lowering of the final course grade, for every absence after the approved limit.

Misuse of technology

Computers and any other electronic devices in our classroom are intended to be used ONLY for learning statistics. They are NOT to be used for any other purpose (email, messaging, social media, other assignments, etc.) during class time. Anyone found using the computer or *any other phone/messaging device* during class for purposes unrelated to the course will be asked to leave the room for the remainder of that class. Anyone found violating this policy a second time will receive a one-letter grade reduction of your final course grade.

The use of any electronic devices (other than your calculator or, when permitted, the computer) during an exam is strictly prohibited. If you use any such device during an exam *for any reason whatsoever* you may be awarded a grade of "0" for that exam.

Unless otherwise instructed, the use of any AI technologies or software to assist with or complete any work submitted for a grade is strictly prohibited.

Problems?

If you are anticipating any difficulties in this class (possibly because you've been known to have them before, you haven't taken a math course for quite some time, you have some type of learning difference, etc.), please let me know. It's a lot better to deal with potential problems before they occur rather than wait until it's too late. If at any time you have any suggestions or concerns with the way the class is progressing, please direct them to me (in person, or, if you prefer, anonymously). If, for any reason, you consider dropping this course, please discuss it with me beforehand. Students sometimes tend to think that they are not doing as well as they really are.

Anticipated course schedule

Week	Dates	Textbook Sections	Topic
1	Sep 2, 4	1.1-1.4	Data, sampling, experiments
2	Sep 9, 11	2.1, 2.2	Summarizing numerical & categorical data
3	Sep 16, 20*	3.1, 3.3, 3.4	Elementary probability, random variables
4	Sep 23, 25	4.1-4.3	Normal & binomial distributions
5	Sep 30	Review, 5.1	Point estimates, sampling variability
	Oct 2	**Exam 1**	
6	Oct 7, 9	5.1, 5.2	Confidence intervals, proportions
	Oct 11-20	*Fall Break*	
7	Oct 21, 23	5.3, 6.1	Inference, hypothesis testing
8	Oct 28, 30	6.1, 6.2	Inference for one or two proportions
9	Nov 4	Review, 7.1	Means, t-distributions
	Nov 6	**Exam 2**	
10	Nov 11, 13	7.1-7.3	Inference for one and two means
11	Nov 18, 20	8.1, 8.2	Linear regression, least squares
12	Nov 25, 27	8.3, 8.4, 9.1	Inference for linear regression, multiple regression
13	Dec 2, 4	9.1, 9.2	Multiple regression

*Note that there is no class on Wednesday, September 18, but the class will meet that week on Friday, September 20. This accommodates the Papal Audience on Wednesday.

This class may deviate from the schedule outlined above. The instructor reserves the right to make changes as needed to the course syllabus.