

UC Davis Graduate School of Management

MGP 403AY 001: Data Analysis for Managers – Fall Quarter 2023 (4 units)

Online: Ten Monday evenings 6 - 8 pm, Oct 2 – Dec 4.

In-Person: Saturdays 9 am – 12:30 pm, Sept 30, Oct 14, Oct 28, Nov 11, Dec 2.

In-Class Location: UC Davis – Sacramento, 4610 X Street, Room 2222.

Instructor: Ed Arnheiter, Ph.D.

Contact Information: edarnheiter@ucdavis.edu, Phone +1 (860) 466 - 0676 (urgent matters only)

Primary Contact Method: edarnheiter@ucdavis.edu

Zoom Class Link for Monday evening sessions: <https://ucdavis.zoom.us/j/98310306664>

Required Material

MyLab Statistics for Business Statistics: A First Course, 8th edition, by Levine, Szabat, and Stephan, ISBN-13: 9780135834886. This ISBN is for **MyLab with eText option**. Other product options are available.

The *MyLab* course name is **MGP 403AY 001 Data Analysis for Managers**, and the Course ID is: *arnheiter14311*. Enrollment for *MyLab* is available beginning **Saturday, September 16**. Google Chrome is the best browser option when working with *MyLab*, *followed by Firefox*. Internet Explorer is not recommended. *MyLab* is required to submit all graded work.

Required software: You must have the latest version of Excel. No additional statistics software is required for the course.

Official Course Prerequisite: *MBA Standing*

Course Description:

Official Catalog Course Description: Introduction to statistics and data analysis for managerial decision making. Descriptive statistics, principles of data collection, sampling, quality control, statistical inference. Application of data analytic methods to problems in marketing, finance, accounting, production, operations, and public policy.

Additional detail:

This course covers the basic principles and implementation techniques of descriptive statistics, sampling, statistical inference, analysis of variance (ANOVA), and regression analysis. An understanding of how these tools can support managerial decision-making is emphasized.

While providing an overview of a broad range of concepts and techniques of probability and statistics, the course is designed to expose managers to key concepts that must underlie any data analysis system. Excel is used extensively to analyze data sets.

Course Purpose within a Program of Study:

The purpose of this course within a graduate business program is to provide students with the tools needed to make managerial decisions based on data. These tools include data collection methods, analysis procedures, data formatting, and statistical software usage. Students are taught to consider the limitations and underlying assumptions of each technique. The skills learned in this course can be applied to many other fields, including marketing, operations, business analytics, and finance.

Expected Learning

After successfully completing this course, the student will be able to:
<ul style="list-style-type: none"> Construct, interpret, and use box plots, histograms, and other graphs Organize and graph both categorical and numerical data Calculate and interpret measures such as the mean, standard deviation, and variance
<ul style="list-style-type: none"> Apply the binomial distribution to real life situations Compute probabilities from the normal distribution (the bell curve), and apply to real-life situations
<ul style="list-style-type: none"> Understand why sample means appear to follow a bell curve, regardless of the shape of the underlying distribution (Central limit theorem) Use sample averages to determine probabilities
<ul style="list-style-type: none"> Construct and interpret confidence interval estimates for a population mean and population proportion Find the required sample size for estimating a population mean and population proportion
<ul style="list-style-type: none"> Understand a “p-value” and use it to determine if there are statistical differences between two or more sample data sets (for both numerical and proportional data)
<ul style="list-style-type: none"> Test for a statistically significant difference between two means Construct confidence intervals and test for the difference between two proportions Test for significant differences between two variances
<ul style="list-style-type: none"> Test for differences between more than two means using “Analysis of Variance” (ANOVA) Understand underlying assumptions, strengths, and limitations of ANOVA Use software to perform ANOVA Make recommendations based on ANOVA results
<ul style="list-style-type: none"> Assess strength of any linear relationship between two variables Know data requirements and underlying assumptions of linear regression Understand strengths and limitations of linear regression Use software to conduct linear regression Make recommendations based on linear regression results

Graded Assignments and Practice:**Graded Assignments**

To receive a passing grade for the course, each student must satisfactorily complete 8 homework assignments and five quizzes, weighted as follows:

Eight Homework Assignments (5% each)	40%
Four Quizzes – about one every other week (10% each)	40%
Final Exam	20%
Total:	100%

Additional Ungraded Practice Work:

Students are encouraged to solve additional problems within *MyLab* that are not part of the assigned homework or quizzes. **Within *MyLab*, from the main menu, select “Study Plan” and then “All Chapters” to see a section-by-section listing of additional practice questions.**

Grading Matrix:

A weighted average will be calculated as follows: $(0.05)(\text{HW1} + \text{HW2} + \text{HW3} + \text{HW4} + \text{HW5} + \text{HW6} + \text{HW7} + \text{HW8}) + (0.10)(\text{Quiz 1}) + (0.10)(\text{Quiz 2}) + (0.10)(\text{Quiz 3}) + (0.10)(\text{Quiz 4}) + (0.20)(\text{Final Exam}) = \text{Final Grade}$

Grade Scale - Letter grades assigned will be as follows:

Overall Score	Grade
94 – 100	A
90 – 93	A-
85 – 89	B+
80 – 84	B
75 – 79	B-
70 – 74	C+
65 – 69	C
60 – 64	C-
55 – 59	D
< 55	F

Grading Criteria:

Graded homework assignments are primarily quantitative and will therefore either be marked wrong or right based on closeness to the correct value. I will review and adjust scoring as necessary, compensating for rounding discrepancies or differences in the number of significant digits. Please feel free to tell me if you think that *MyLab* made a scoring error. Scoring errors do happen occasionally in *MyLab*, and I am happy to review and adjust, where warranted.

Submission Information:

All HW assignments and quizzes are submitted online using the *MyLab* system. Due dates are listed in the syllabus as well as within *MyLab* itself.

For homework in *MyLab*, you will be allowed two attempts on each assignment (i.e., if you do not get everything correct the first time, you can try again). Selecting “*View an Example*” does not use one of your attempts, nor does the data set change when you return to the problem. **If you do not finish answering a question and log-off to finish later, the data set may have changed.**

On quizzes, you are allowed one attempt to answer each problem. **There is a 75-minute time limit on Quiz 1 and 2, a 90-minute time limit on Quiz 3 and 4, and the Final Exam has a 120-minute time limit.** You may use Excel on the quizzes and exam, and refer to your notes and book.

Instructor Feedback:

Using *MyLab*, you will see the results of your homework efforts in real-time! On quizzes, you will be able to see your score immediately after submission, and see the questions themselves and correct answers after the quiz access period has ended. I can provide you with an assessment of your overall performance – just send an email or call me and I will review your grades and course progress with you.

Tentative Course Schedule:

Week (Dates)	Core Topics Covered	Notes Module	Reading – 8th edition	Homework	Quiz
1 Sept 30 In-Person	Descriptive Statistics: Organizing and visualizing data, numerical descriptive measures.	1	2.1 - 2.5, 3.1 - 3.4	HW #1 (CH 2 & 3) due by 11:59 PM on Oct 9.	
2 Oct 2 & Oct 9 Zoom	Covariance and Coefficient of Correlation. The binomial distribution	2	3.5 5.2	HW #2 (CH 3 & 5) due 10/16.	Quiz 1 due 10/16 (Chapters 2, 3, 5).
3 Oct 14 In-Person	Continuous probability distributions – the Normal Distribution, evaluating normality of a variable	3	6.1, 6.2, 6.3	HW #3 (CH 6) due 10/23.	
4 Oct 16 & Oct 23 Zoom	Sampling & Sampling Distributions: sampling distribution of the sample mean, central limit theorem.	4	7.1 – 7.2	HW #4 (CH 7) due 10/30.	Quiz 2 due 10/30 (Chapters 6, 7).
5 Oct 28 In-Person	Confidence intervals for the mean and proportion, sample size determination.	5	8.1 – 8.4	HW #5 (CH 8.1, 8.2, 8.3, 8.4) due 11/6.	
6 Oct 30 & Nov 6 Zoom	Hypothesis testing: introduction and notation, z-test for one-sample proportion.	6	9.1, 9.4		
7 Nov 11 In-Person	Testing for differences between two means	7	10.1	HW #6 (CH 9.1, 9.4, 10.1) due 11/20.	Quiz 3 due 11/20 (Chapters 8, 9).
8 Nov 13 & Nov 20 Zoom	Equal variance testing.	8	10.4		
9 Nov 27 Zoom Dec 2 In-Person	One-way Analysis of Variance (ANOVA). Begin coverage of simple linear regression.	8	10.5	HW #7 (CH 10.1, 10.4, 10.5) due 12/4.	
10 Dec 4 Zoom	Simple linear regression; Types of models, regression equation, Measures of variation, assumptions, residual analysis, t-test for slope, t-test for correlation coefficient.	9	12.1 - 12.5, 12.7-12.8	HW #8 (CH 12.2, 12.3, 12.7) due 12/11.	Quiz 4 due 12/11 (modules 7, 8, and 9).
11 Dec 16	Final Exam Day – Location TBD				Final exam (cumulative) due Saturday, 12/16.

Course Policies:

The course Canvas site will be your sole source for the PowerPoint lecture notes and associated data sets. The student is responsible for reading and viewing all of this material and is encouraged to ask the instructor questions about any topics that are not clearly understood. All Homework Assignments, Quizzes, and the Final Exam will be submitted through the *MyLab* system.

University Policies (also refer to the Code of Academic Conduct at https://ossja.ucdavis.edu/code-academic-conduct?utm_source=sja&utm_medium=redirect-page)

1. Statement on Accommodation

UC Davis is committed to educational equity in the academic setting, and in serving a diverse student body. All students who are interested in learning about how disabilities are accommodated can visit the [Student Disability Center](#) (SDC). If you are a student who requires academic accommodations, please contact the SDC directly at sdc@ucdavis.edu or 530-752-3184. If you receive an SDC Letter of Accommodation, submit it to your instructor for each course as soon as possible, at least within the first two weeks of a course.

2. Rights and Responsibilities

All participants in the course, instructor and students, are expected to follow the UC Davis [Principles of Community](#), which includes affirmation of the right of [freedom of expression](#), and rejection of discrimination. The right to express points-of-view without fear of retaliation or censorship is a cornerstone of academic freedom. A diversity of opinions with respectful disagreement and informed debate enriches learning. However, in this course, any expression or disagreement should adhere to the obligations we have toward each other to build and maintain a climate of mutual respect and caring.

You are expected to take UC Davis's [Code of Academic Conduct](#) as seriously as we do. You were given this code of conduct with explicit explanations of violations (e.g. plagiarism, cheating, unauthorized collaboration, etc.) and your responsibilities in regard to them during orientation, and you signed a statement affirming that you understand it. Academic conduct violations will not be tolerated, and your instructor will not hesitate to turn violators over to Student Judicial Affairs. If you are uncertain about what constitutes an academic conduct violation, please refer to the code linked above, contact your instructor, or refer to the [Office of Student Judicial Affairs](#).

All material in the course that is not otherwise subject to copyright is the copyright of the course instructor and should be considered the instructor's intellectual property.

3. Safety and Emergency Preparedness

UC Davis has many resources to help in case of emergency or crisis. While reviewing campus [Emergency Information](#), you may want to register for UC Davis Warn Me and Aggie Alert, which will give you timely information and instructions about emergencies and situations on campus that affect your safety.

If there is an emergency in the classroom or in non-Davis locations, follow the instructions of your instructor.

4. Student Wellness

You deserve respect, and are encouraged to [practice self-care](#) so that you can remain focused and engaged; that might mean getting a drink of water, leaving to use the restroom, taking a moment to stretch, or doing something else you need to do to take care of yourself. Please be respectful of others by minimizing distractions when practicing self-care – especially in lab, field or studio settings where safety is imperative.

College life can be overwhelming at times but know that you are not alone if you're feeling stressed. For many of us, systems of oppression such as racism, sexism, heterosexism or cissexism may cause additional stress. Please remember to practice self-care and reach out for support if and when you need it.

You can visit [Virtual UC Davis](#) to find resources related to health and well-being, academics, basic needs (food and housing) and more.

5. Disclaimer

Unexpected events might require elements of this syllabus to change. Your instructor will keep you informed of any changes.