

# MGMT 402 – DATA & DECISIONS

Fall 2021 – 4 Units

## Course Syllabus

### Instructor Information

<i>Faculty of Record:</i>	Professor Elisa Long	Professor Auyon Siddiq
<i>Email:</i>	<a href="mailto:elisa.long@anderson.ucla.edu">elisa.long@anderson.ucla.edu</a>	<a href="mailto:auyon.siddiq@anderson.ucla.edu">auyon.siddiq@anderson.ucla.edu</a>
<i>Office location:</i>	Gold Hall, Room B-508	Gold Hall, Room B-511
<i>Office hours:</i>	Wednesdays 3-5pm	Wednesdays 3-5pm

### Course Times and Location

<i>Section</i>	<i>Day &amp; Time</i>	<i>Location</i>	<i>Teaching Assistant</i>	<i>Email</i>
A	Tue, Thu 2:30 – 4:00pm	G304	Jingwei Zhang	<a href="mailto:jingwei.zhang.phd@anderson.ucla.edu">jingwei.zhang.phd@anderson.ucla.edu</a>
B	Mon, Wed 9:45 – 11:15am	G304	Erik Maroney	<a href="mailto:erik.maroney.2022@anderson.ucla.edu">erik.maroney.2022@anderson.ucla.edu</a>
C	Mon, Wed 12:45 – 2:15pm	G304	Tianyang Liu	<a href="mailto:elijah1998@g.ucla.edu">elijah1998@g.ucla.edu</a>
D	Tue, Thu 12:45 – 2:15pm	G304	Jingwei Zhang	<a href="mailto:jingwei.zhang.phd@anderson.ucla.edu">jingwei.zhang.phd@anderson.ucla.edu</a>
E	Tue, Thu 9:45 – 11:15am	G304	Sahil Sharma	<a href="mailto:sahil.sharma.2022@anderson.ucla.edu">sahil.sharma.2022@anderson.ucla.edu</a>

### Course Website (all sections)

<https://ccle.ucla.edu/course/view/21F-MGMTFT402-1>

### Pre-requisites

There are no course pre-requisites, but enrollment is limited to first-year full-time Anderson MBA students.

### Course Description

Data literacy is a critical skill for leaders in any modern organization. The objective of this course is to equip students with core competencies in data analysis, including: visualizing and interpreting data, probabilistic reasoning, running statistical experiments, and building prediction models.

For Fall 2021, the course has been redesigned to follow a flipped classroom. Each week, we will post a short video on CCLE, covering the fundamental concepts and theory required for the corresponding week. This will

allow us to utilize our in-class time for more experiential learning, with each week consisting of one lecture or discussion and one in-class lab. In the lab sessions, you will apply what you've learned to complete an in-class assignment with your learning team. Labs will be completed using the statistical package R, with support from the teaching assistants.

## Course Objectives

At the end of the course, students will be able to:

1. Generate summary statistics and graphs from raw datasets.
2. Formulate an A/B test using raw data on a micro-experiment between two groups and test for statistical significance.
3. Describe a dataset and analyze linear relationships between variables.
4. Run a logistic regression and compute model accuracy in an out-of-sample test.

## Class Preparation

We will cover a significant amount of material over 10 weeks. This course will emphasize the practical application of data analysis, but you will still be expected to gain a sound understanding of the underlying concepts. We will assume a quantitative background at the level of the GMAT/GRE. You may also find it helpful to independently refresh yourself on these topics toward the beginning of the course. *No prior programming experience is necessary for this course.*

## Course Materials

### Course Reader

- Cases may be purchased at: <https://ucla.redshelf.com/book/1920093>

### Software

We will use the free statistical package **R** for all lab assignments, using the **R Markdown** environment.

- First, download and install R: <https://cloud.r-project.org/>
- Second, download and install RStudio Desktop: <https://www.rstudio.com/products/rstudio/download/>

### Online Resources

- A free and helpful resource for R: <https://moderndive.com/>
- A collection of charts and visualizations using ggplot in R: <https://www.r-graph-gallery.com/>

## Grading and Assignments

### Grades

Your overall course grade will be determined by how your performance on graded assignments ranks in comparison with other students in the class according to the core course grade distribution at Anderson.

A+ or A (20%), A- (25%), B+ or B (45%), B- or below (10%)

Final grades will be based on the following assignments and weighted percentages.

<i>Assignment</i>	<i>% of Grade</i>
R labs (group)	35%
Cases (group)	15%
Quizzes (individual)	20%
Peer evaluation (individual)	10%
Final exam (individual)	20%

### R Labs (35%)

Eight in-class R labs are to be completed in your learning teams, each worth 5%. Only your top seven lab scores will count towards your final grade. The labs are intended to be mostly completed during the allotted class time; however, you may need to finalize your submissions after class. The deadline to submit each lab is Sunday night following that week's lab. The purpose of the labs is to provide an opportunity to apply the concepts from lecture to analyze real datasets and collaborate with members of your learning team.

### Cases (15%)

Three cases are to be completed within your learning team, each worth 5%. Cases are available in the Course Reader. Additional instructions and questions will be posted on CCLE.

- Innovation at Uber
- Real Estate
- Nomis

### Quizzes (20%)

Four online quizzes are to be completed **individually**, each worth 5%. Quizzes are concept checks of course material and should not take much time. After questions are posted, you will have 48 hours to submit answers on CCLE.

### Peer Evaluation (10%)

Each learning team member will assess the contributions of your fellow team members at the end of the quarter. Failure to complete the evaluation of your teammates will adversely affect your grade.

### Final Exam (20%)

An in-person final exam is to be completed **individually**. The exam is open-notes and requires a calculator. To perform well on the exam, you should be comfortable with performing basic calculations by hand, at a difficulty level similar to the problems covered in class. The exam will NOT require the use of R. There is no make-up for the exam, except under exceptional circumstances. Please reach out to us if this is an issue.

## UCLA Policies

### Code of Conduct

All participants in the course are bound by the **UCLA Student Conduct Code**:

<https://deanofstudents.ucla.edu/individual-student-code>

### Honor Code

The **UCLA Anderson Honor Code** will apply at all times, and we expect you to strictly adhere to this policy:

<http://www.anderson.ucla.edu/Documents/areas/adm/web/AndersonHonorCode.pdf>

### Academic Integrity

UCLA is an institution of learning, research, and scholarship predicated on the existence of an environment of honesty and integrity. As members of the academic community, instructors, students, and administrative officials are all responsible for maintaining this environment. It is essential that all members of the academic community practice academic honesty and integrity and accept individual responsibility for their work. Academic misconduct is unacceptable and will not be tolerated in this course. Cheating, forgery, dishonest conduct, plagiarism, and collusion in academic misconduct erode the University's educational, research, and social roles. Students who knowingly or intentionally conduct or help another student engage in acts that violate UCLA's expectations of academic integrity will be subject to disciplinary action and referred to the Dean of Students' Office. Please familiarize yourself with **UCLA's Academic Integrity Policy** and speak to your instructor if you have any questions about what is and is not allowed in this course.

<https://www.deanofstudents.ucla.edu/Academic-Integrity>

### COVID Policies

Students must adhere to the current campus directives related to COVID-19 mitigation, and refusal to do so may result in the student being asked to leave the classroom or referred to the **UCLA Office of Student Conduct**.

## Accessible Education & Inclusive Education

### Disability Services

UCLA is committed to providing a barrier free environment for persons with documented disabilities. If you are already registered with the Center for Accessible Education (CAE), please request your Letter of Accommodation in the Student Portal. If you are seeking registration with the CAE, please submit your request for accommodation via the CAE website. Students with disabilities requiring academic accommodations should submit their request for accommodations as soon as possible, as it may take up to two weeks to review the request. For more information, please visit the CAE website ([www.cae.ucla.edu](http://www.cae.ucla.edu)), visit the CAE at A255 Murphy Hall, or contact CAE by phone at (310)825-1501.

### Equity, Diversity, and Inclusion

Please familiarize yourself with UCLA Anderson's commitment to maintaining an equitable, diverse, and inclusive community: <https://www.anderson.ucla.edu/about/equity-diversity-and-inclusion>

## TA Review Sessions

Weekly, optional TA sessions will review important concepts from lecture and provide support for using R.

<i>Date</i>	<i>Topic</i>	<i>Time</i>	<i>Location</i>	<i>TA</i>
Fri Sep 24	Data Visualization	11am-12pm 2pm-3pm	B313 B313	Erik Erik
Fri Oct 1	Hypothesis Testing	11am-12pm 2pm-3pm	B313 B313	Sahil Sahil
Fri Oct 8	Linear Regression	11am-12pm 2pm-3pm	B313 B313	Erik Tianyang
Fri Oct 15	Multiple Regression	11am-12pm 2pm-3pm	B313 B313	Erik Tianyang
Fri Nov 5	Variable Selection	11am-12pm 2pm-3pm	D313 D313	Tianyang Sahil
Fri Nov 12	Probability and Simulation	11am-12pm 2:30pm-3:30pm	D313 D313	Tianyang Sahil
Fri Nov 19	Logistic Regression	11am-12pm 2pm-3pm	D313 D313	Jingwei Jingwei
Fri Dec 3	Course Review	11am-1pm 2pm-4pm	B301 B301	Jingwei Jingwei

## Course Outline

Class	Dates	Instructor	Topic	Modern Dive	Dataset	Due Before Class
1	Thu Sep 16 / Fri Sep 17	Long	Descriptive Statistics	Chapter 1	Movie Revenues	
2	Mon Sep 20 / Tue Sep 21	Long	Data Visualization	Chapter 2	Sports	
3	Wed Sep 22 / Thu Sep 23	Long	Data Wrangling	Chapters 3-4	Lab #1: IMDB Ratings	
4	Mon Sep 27 / Tue Sep 28	Long	Hypothesis Testing, p-values, t-tests	Chapter 9	Vungle	Quiz #1
5	Wed Sep 29 / Thu Sep 30	Long	A/B Testing and Randomized Experiments		Lab #2: Zocdoc	
6	Mon Oct 4 / Tue Oct 5	Long	Simple Regression	Chapter 5	Health Insurance	Case: Innovation at Uber
7	Wed Oct 6 / Thu Oct 7	Long	Simple Regression		Lab #3: Wine Prices	
8	Mon Oct 11 / Tue Oct 12	Long	Multiple Regression	Chapter 6	Diamonds	Quiz #2
9	Wed Oct 13 / Thu Oct 14	Long	Multiple Regression		Lab #4: COVID-19	
10	Mon Oct 18 / Tue Oct 19	Long	Multiple Regression	Chapter 10	Diversity in Hollywood	
11	Wed Oct 20 / Thu Oct 21	Siddiq	Diagnostics and Transformations		Car Values	Case: Real Estate
<b>DOJ – no class</b>						
12	Mon Nov 1 / Tue Nov 2	Siddiq	Variable Selection		Airbnb Listings	
13	Wed Nov 3 / Thu Nov 4	Siddiq	Variable Selection		Lab #5: Airbnb Listings	
14	Mon Nov 8 / Tue Nov 9	Siddiq	Probability and Simulation	Chapter 7	Revenue Management	Quiz #3
15	Wed Nov 10 / Fri Nov 12	Siddiq	Probability and Simulation	Appendix A.2	Lab #6: Revenue Management	
16	Mon Nov 15 / Tue Nov 16	Siddiq	Logistic Regression		Framingham Heart Study	
17	Wed Nov 17 / Thu Nov 18	Siddiq	Logistic Regression		Lab #7: Voter Turnout	
18	Mon Nov 22 / Tue Nov 23	Siddiq	Classification and Regression Trees		Iris Flowers, Diamonds 2.0	Quiz #4
19	Mon Nov 29 / Tue Nov 30	Siddiq	Classification and Regression Trees		Lab #8: Titanic Survival	
20	Wed Dec 1 / Thu Dec 2	Siddiq	Course wrap-up			Case: Nomis
	Tue Dec 7 (8-11am)		Final Exam			