COMM 160DS – Data Science Use in Communication Research
Syllabus – Winter 2021

Class Time:	**Online: M 2:00 – 3:15 PM**	**Location:**	**Online**
Instructor:	**Dr. Ziad Matni**	**Email:**	ziad.matni@ucsb.edu
Office Hours:	**Thursdays, 10:00 to 11:30 AM** on **Zoom**		

Teaching Assistant:	Mohemmad Hansia	**Email:**	mhansia@ucsb.edu
T.A. Office Hours:	**Mondays 1 - 2 pm & 3:15 - 4:15 pm** on **Zoom**		

Class Main Websites:	**GauchoSpace**	for all class materials and Zoom links
	Piazza	for Q+A and general communication
		https://piazza.com/ucsb/winter2021/comm160ds

Catalog Description and Pre-Requisites

"Data Science" is a term that gets a lot of mention these days as massive amounts of data continue to be generated by us in our daily "electronic lives". The ability to understand data, process it, extract value from it, visualize it, and communicate it is being recognized more and more as a very important and useful skill. While the term often conjures up images of computers and algorithms (as well as Facebook scandals and the ubiquitous power of tech companies), it is not just about the "nuts and bolts" of technology and engineering. Researchers in Communication, and other areas in the Social Sciences, have been adopting Data Science techniques for some time now because, in certain cases, these techniques allow us to make sense of people's behavior in many contexts, like when they communicate online, or when they engage in shopping and commerce, or when they vote in elections.

In this class, we will look at Data Science in Communication (and other related Social Sciences) and delve into issues of not just computational methodologies and processes (and related concepts such as "Big Data", "Machine Learning", and "Artificial Intelligence"), but also important aspects of ethics, social impact of technology, and data visualization. We will also come to understand different aspects and nuances of this topic by examining multiple case studies of the use of Data Science techniques in Communication research.

There are no pre-requisites for this class other than upper-division standing. It is understood that the student has taken at least one college-level statistics course and is familiar with scientific research methods. It is open to all UCSB majors as it is cross-listed in the Data Science Initiative for the university. More information on the Data Science Initiative can be found at: https://datascience.ucsb.edu/

Course Website

I will be using **GauchoSpace** to put up class readings, assignments, and other resources for you, as well as put out important announcements. Go to https://gauchospace.ucsb.edu, log in using your UCSBNetID credentials, and look for the COMM 160DS site. If you have trouble finding the website, please let me know as soon as you can. *ALL ZOOM LINKS ARE ON GAUCHOSPACE!*

We will also be using **Piazza** to help facilitate your questions + answers online asynchronously. Piazza is a great way to connect students with students, as well as students with myself/TA. You can pose questions, answer questions, and add follow ups to comments. You can post/edit anonymously and tag your posts. The link to our class' Piazza site is on GauchoSpace on the top of the page and on the top of p.1 of this syllabus.

Class, Lab and Office Hour Formats

This class will **NOT** meet face-to-face for lecture this quarter and will be conducted **completely online** for the duration of the Winter 2021 quarter. Some of the class will be **synchronous** (i.e. "live") and some it will be **asynchronous** (i.e. recorded and other material for you to view).
*Our first meeting will take place on **Zoom** on Monday, January 4th at 2:00 PM
(call details will be emailed out).*

We will be meeting on Zoom once a week on *Mondays* at 2:00 PM (PDT) and I will be posting class instructional videos (and other material) on GauchoSpace on *Wednesday*s. You will watch the videos and do the associated readings. In addition, you will take the associated module timed quizzes every week on *Fridays*.

The live Zoom sessions **will be recorded** for students who may not be able to attend and posted on GauchoSpace afterwards. *By default, your microphone and camera will be muted when you join the session. If you do not want to be included in the recording, simply keep your camera and microphone off.* You may ask questions in the chat window. **Please do not share the recording or any class material with non-students** as this is a violation of certain UCSB, state, and federal policies and laws. **The instructor reserves the sole legal right to record and distribute this material**.

The purpose of the lectures in this course is to guide you through the readings and assignments. Especially as it pertains to:

- provide an overview of how everything fits together,
- provide hands-on demonstrations of things that you'll do on your own later,
- provide additional information that is not in the textbook/handouts (and to sometimes clarify the textbook/handouts), and
- provide an opportunity to ask questions, and hear answers to questions asked by others.

This course moves quickly and covers advanced material, so keeping up with the videos and the readings every week is very important and is key to doing well in this class.

Dr. Matni will have his office hours on **Thursdays, 10:00 to 11:30 AM on Zoom** and the T.A, Mohemmad Hansia will have his office hours on **Mondays 1 - 2 pm & 3:15 - 4:15pm on Zoom**. You are highly encouraged to call in with your questions. You can also pose questions – and answer each other's questions – on **Piazza**.

Invariably, you are going to have questions on lecture or lab-related stuff. What do you do? **Your first choice should always be to use __Piazza__ to post the question** (or see if anyone's asked it and received an answer). Make it a habit to check Piazza many times a week – see if you can answer your fellow students' questions yourself! The TAs and the instructor will also be using Piazza periodically to help you out. Please don't use Piazza to post outright solutions to homework problems – you can, of course, *discuss* the exercises and ways to solve the problems.

I encourage you to contact me with your questions via Piazza. If you have questions that you'd rather email me with, then **PLEASE put "COMM160" in the subject line.** Please keep in mind that this is NOT the only class I teach!

Readings

This class has **required readings** that I will provide to you as PDF files on the course website on GauchoSpace. We will discuss these in our "live" lecture and I expect you to come prepared by doing your readings. Instead of "live" discussions, I may assign you to discuss the readings on a GauchoSpace forum that I will set up for this occasion. New readings may be assigned as events take place that are relevant to the course content, so **check the course website often for reading material**. I will let you know how much of these readings to do (i.e. if you have to read certain sections of it, or read it in its entirety). The schedule for these readings is shown in the class schedule on the last page of this syllabus. The material in the readings, especially the ones we discuss in class, are fair game in quiz/exam questions! DO your readings BEFORE class!

There is no required textbook, however, I will list some optional or reference textbooks for you to be aware of. These are great resources for the intermediary/advanced Data Science students.

Homework

You will have to do multiple homework assignments. Some of them will be short papers to write on topics we have discussed in class and that have to do with the readings. Some of them will be exercises on methods like quantitative analysis or coding. I will give you instructions ahead of time. Whenever your submissions need to be electronic, I will let you know how to submit them (usually they will be PDF submissions on GauchoSpace).

Turn in your own work and don't forget to cite (i.e. give credit to) all your sources when appropriate, whether you consult your readings, a website, or another person. You are expected to know and use correct APA style in your homework assignments, unless told otherwise by the professor.

Computer Programming/Coding Expectations

Some of the computational techniques we will learn involve some computer programming in Python and/or R. However, you are not expected to know *anything* about computer programming before you take this class. You will learn some very useful and practical skills, but you won't emerge from the class a master (or even intermediate) computer programmer! ☺ Rather, you will learn important but basic skills of thinking about problems "algorithmically" as well as skills of actual computer programming at a beginner level. These skills will be useful to you if you wanted to take on other, more advanced, programming classes later on.

If you do know computer programming before taking this class, please identify yourself to me at the start of the quarter and I can tailor some assignments more to your level of knowledge.

Expected Conduct

Although this is an online class, I still expect you to be responsible for your own learning and to ask questions via the channels explained above whenever you have them and to your video viewings and textbook readings as assigned.

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I expect you to do your own work at all times. Please familiarize yourselves with the university's policies on academic integrity and honesty (see the section in this syllabus that details this further). Failure to comply with these policies will result in failing the class
(i.e. getting an F on your transcript and being reported to the university).

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Grading

This course has multiple assignments, multiple quizzes and one final exam.

Item	Grade %
Assignments	50%*
Weekly Quizzes	30 %
Final Exam	20 %
TOTAL	**100 %**

* Your participation is noted and can affect this grade by up to 2%.

Class Grade Distributions

These are calculated to 2 decimal places and very strictly assigned.

Range	Grade	Range	Grade
[93 – 100]	A	[77 – 80)	C+
[90 – 93)	A-	[73 – 77)	C
[87 – 90)	B+	[70 – 73)	C-
[83 – 87)	B	[60 – 70)	D
[80 – 83)	B-	< 60	F

[X – Y) means *"X to Y inclusive of X (but not Y)"*

A+ grades: These may be awarded to the *very* best performing students in the class—but the cutoff for A+ grades will be determined at the end of the course *at the discretion of the instructor* (there is no pre-determined cutoff---an average of 97 or more doesn't guarantee you an A+ grade.) If I decide to curve the grade (it's not guaranteed that I will), I will do so on the final class scores and not on any individual item.

F grades: *If you miss your final exam, you will receive an F, regardless of your running score in the class*. If you feel that I or the TAs have made a mistake (like adding up a grade incorrectly), then you should certainly bring that to my attention in an expedient fashion (*within one week's time*), **but please do not engage in** grade-grubbing (for example, do NOT ask me to round up your final class grade at the end of the quarter) – please know that I will <u>not</u> engage you in these requests (i.e. I typically ignore these requests). If you have any questions about how grades are computed, please feel free to ask, and I would be happy to explain further.

Quizzes and Exams

Instead of a midterm exam, you will have weekly quizzes that you have to take during prescribed times (and no make ups for other times). The quizzes **WILL ALWAYS BE ON FRIDAYS AND TAKE PLACE ON GAUCHOSPACE**.

There will be a final exam that is cumulative of all materials covered. Details for this will be provided at a later date.

Any sign of cheating or plagiarism will result in an **F** grade and you will be reported to the University. This includes letting other people do the work for you.

Late Policy and Make Up Policy – PLEASE READ!

A late submission means **submitting 24 hours after a deadline**. Late submissions will result in a **20% penalty**. Anything submitted beyond the deadline + 24 hours will receive a **zero**. No makeup is allowed for assignments except in rare cases, if there is a documented family emergency, documented extended illness, documented required court appearance, or other situation beyond the students' control (**again, with documentation**) the instructor may grant additional make up days entirely at the instructor's discretion—but this is **not** a guarantee or a right. Asking for accommodation because "I already bought my plane ticket" or "I have out of town guests that week" is a useless exercise and will not work for you.

THERE IS NO MAKEUP FOR ANY QUIZ OR EXAM.

If you believe that a grade on an assignment or a midterm exam is wrong, you may ask for a review for a possible re-grade. In that case, you have to arrange a meeting with your T.A. **within 1 week** from when the grade was issued (in other words, we will ignore requests for re-grade at some point after that). Please have a good reason to ask for a re-grade and understand that it is not a guarantee of a grade change.

UCSB and Instructor's Policies on Academic Integrity and Honesty

Academic Integrity

It is expected that students attending the University of California understand and subscribe to the ideal of academic integrity, and are willing to bear individual responsibility for their work. Any work (written or otherwise) submitted to fulfill an academic requirement must represent a student's original work. **Any act of academic dishonesty, such as cheating or plagiarism, will subject a person to University disciplinary action**. Using or attempting to use materials, information, study aids, or commercial "research" services not authorized by the instructor of the course constitutes cheating. Representing the words, ideas, or concepts of another person without appropriate attribution is plagiarism. Whenever another person's written work is utilized, whether it be a single phrase or longer, quotation marks must be used and sources cited. Paraphrasing another's work, i.e., borrowing the ideas or concepts and putting them into one's "own" words, must also be acknowledged.

I will report the violation to the Associate Dean of Students for possible referral to the Conduct Committee. That committee has the authority to impose a range of sanctions, including suspension. **Further information is available at: http://judicialaffairs.sa.ucsb.edu/academic-integrity**

Cheating on exams

During the quizzes and final exam, you may not work with another student nor share your answers/test with another student. All of these behaviors are forms of **cheating** and will result in a **zero** on the exam, at minimum.

Inappropriate Use of Course Materials

My lectures and course materials, including PowerPoint presentations, tests, outlines, and similar materials, are protected by U.S. copyright law and by University policy. I am the exclusive owner of the copyright in those materials I create. You may take notes and make copies of course materials for your own use. You may also share those materials with another student who is enrolled in or auditing this course.

You may not reproduce, distribute or display (post/upload) lecture notes or recordings or course materials in any other way — whether or not a fee is charged — without my express prior written consent. You also may not allow others to do so. If you do so, you may be subject to student conduct proceedings under the **UC Santa Barbara Student Code of Conduct**. Similarly, you own the copyright in your original papers and exam essays. If I am interested in posting your answers or papers on the course web site, I will ask for your written permission.

Schedule
The lecture topics and/or their dates are subject to change or re-arrangement.

SEE GAUCHOSPACE FOR YOUR WEEKLY READINGS (available in PDF)

Week	Topic(s)	Assignments and Quizzes
1	Introduction to the class Introduction to Computational Social Science	-
2	Data and Society: Impact and Ethics	Quiz 1 Assignment 1 (short paper)
3	No class on Monday (*MLK Jr. Day – Holiday*) Review of Important Quantitative Research Methods	Assignment 2 (short paper)
4	Measurements and Data Review of Important Statistical Methods & Techniques	Quiz 2
5	Collecting Data from Online Sources Computational Concepts (algorithms, programs, machine learning, AI)	Quiz 3 Assignment 3 (exercises)
6	Basic Concepts of Programming	Quiz 4
7	No class on Monday (*Presidents' Day – Holiday*) Data Visualization and the Interpretation of Data	Assignment 4 (exercises)
8	Exercises using Programming to Collect/Analyze Data	Quiz 5 Assignment 5 (exercises)
9	More Exercises	Quiz 6
10	Case Studies from Social Science Research	Quiz 7 Assignment 6 (short paper)

This syllabus and schedule are subject to some change. The professor will do his best to convey changes in a timely fashion to the students, if they occur. Students are encouraged to check the syllabus often via the class' main website. One way to tell if you have the latest version is to check the version number that's at the bottom of each page of this syllabus (e.g. v1, etc…)

Sample Readings for this Class

Ethics and Social Impact of Big Data/Data Science

Ciampaglia, G. L. (2018). Fighting fake news: a role for computational social science in the fight against digital misinformation. *Journal of Computational Social Science*, 1(1), 147-153.

Lapowsky, I. (2019). How Cambridge Analytica sparked the great privacy awakening. Wired, Mar, 17. Retrieved 3/1/20 from: https://www.wired.com/story/cambridge-analytica-facebook-privacy-awakening/

Latonero, M. (2019). Opinion: AI for good is often bad. *Wired*, Nov, 18. Retrieved 3/1/20 from: https://www.wired.com/story/opinion-ai-for-good-is-often-bad/

Lazer, D., Pentland, A., Adamic, L., Aral, S., Barabasi, A. L., Brewer, D., ... & Jebara, T. (2009). Social science. Computational social science. *Science* (New York, NY), 323(5915), 721-723.

Pasternack, A. (2012). Was Space Shuttle Challenger a Casualty of Bad Data Visualization? *Vice*. Retrieved 3/1/20 from: https://www.vice.com/en_us/article/kbb3qz/could-better-data-design-have-prevented-challenger

Poor, N. & Davidson, R. (2017). The ethics of using hacked data: Patreon's data hack and academic data standards. *Internet Research Ethics for the Social Age*, 278-280.

Provost, F., & Fawcett, T. (2013). Data science and its relationship to big data and data-driven decision making. *Big data*, 1(1), 51-59.

Data Visualization Methods

Kirk, A. (2016). Data visualisation: A handbook for data driven design. Chapter 1: Defining Data Visualisation *Sage*.

Schwartz, R., Naaman, M., & Matni, Z. (2013). Making sense of cities using social media: Requirements for hyper-local data aggregation tools. In *Proceedings of the International AAAI Conference on Web and Social Media* (Vol. 7, No. 1).

Case Studies

Abbar, S., Mejova, Y., & Weber, I. (2015, April). You tweet what you eat: Studying food consumption through twitter. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (pp. 3197-3206).

Margolin, D., & Markowitz, D. M. (2018). A multitheoretical approach to big text data: comparing expressive and rhetorical logics in Yelp reviews. *Communication Research*, 45(5), 688-718.

Additional Campus Resources

If you experience difficulty in this course for any reason, please don't hesitate to contact your instructor. The following campus services might also be beneficial to you. Please use them as needed.

SOME OF THE FOLLOWING RESOURCES MAY BE LIMITED OR MODIFIED BECAUSE OF THE UNIQUE CIRCUMSTANCES OF THIS ONLINE QUARTER.

Library Remote Resources

https://www.library.ucsb.edu/news/remote-resources-services-ucsb-library-users

Information on searching and accessing the Library's remotely accessible resources and services is available at the link above.

Disabled Students Program

Location: 2120 Student Resources Building | 805.893.2668 | http://dsp.sa.ucsb.edu/

The Disabled Students Program offers many services, such as reading services, notetaking assistance, test-taking accommodations, and registration assistance. For more information on these services, eligibility, and registration, please call or visit the Disabled Students Program office.

CSO Safety Escorts

805.893.2000 | https://www.police.ucsb.edu/cso/safety-escorts

The CSO (Community Service Organization) Escort Program is a free service provided to all students, faculty and community members during the evening and early morning hours. The objective of the escort service is to provide a safer mode of transportation through campus and Isla Vista. The escort service is based on the "buddy" system which is to simply provide another person to travel with you to your destination. The CSO Escort Service can be used by simply calling the Police Dispatch through the Escort Phone Line at 893-2000. Escorts can also be requested through the Red Emergency Phones located all over campus.

Food For All

If you are facing any challenges securing food or housing, and believe this may affect your performance in the class, you are urged to meet with a Food Security and Calfresh Advocate, who is aware of the broad variety of resources that UCSB has to offer (see their drop-in hours at food.ucsb.edu). You are also urged to contact the professor or teaching assistant if you are comfortable doing so. Please visit food.ucsb.edu for additional resources including Calfresh, the AS Food Bank, and more.

Campus Learning Assistance Service

Location: Student Resource Building 3210 | 805.893.3269 | http://clas.sa.ucsb.edu/

CLAS helps students increase their mastery of course material through course-specific tutoring and academic skills development. The tutorial groups and drop-in tutoring schedules are posted on the website. CLAS also provides workshops and counseling in test-taking as well as paper-writing skills.

Counseling Services (CAPS)

Location: Building 599 | 805.893.4411 | http://caps.sa.ucsb.edu/

Counseling Services offers counseling for personal concerns and crisis intervention, stress management, self-help information, and connections to off-campus mental health resources.

There is a Mental Health Peer Services in CAPS that offers drop-in peer counseling, massage & egg chairs, workshops on managing stress (and many other topics), as well as one-on-one sessions with a peer to help students learn coping skills to reduce anxiety (School Anxiety Program).

CARE (Campus Advocacy, Resources & Education)
Location: Student Resource Building, 1st Floor | http://wgse.sa.ucsb.edu/Care/
Provides confidential advocacy and support to anyone impacted by sexual assault, dating/domestic violence and stalking.

Office of Student Life
Location: Student Resource Building 1104 & 2260 | 805.893.4569 | http://osl.sa.ucsb.edu/
The Office of Student Life provides assistance with student emergencies, administrative withdrawals, and other unique academic situations and options.

ONDAS Student Center
Location: Kerr Hall 1150 | 805.893.3457| http://ondas.ucsb.edu/
The OSC offers academic support, mentoring, special programming, and community for all UCSB students, especially first generation students.

Transfer Student Center
Location: UCSB Library, First Floor, Ocean Side | http://www.transfercenter.ucsb.edu/
A space for transfer students to make connections, find academic support, mentoring, and special programs.

Undocumented Student Services
Location: 2210 Student Resource Building | 805.893.5609 http://www.sa.ucsb.edu/DreamScholars/
USS provides general counseling to undocumented and mixed status students. Services include access to student mentors, programs and legal service referrals.

Educational Opportunity Program
Location: Student Resource Building, Room 2210 | 805.893.4758 | http://eop.sa.ucsb.edu/
EOP provides advising, mentoring, and programming for first generation and income eligible students.

Office of International Students & Scholars
Location: Student Resource Building, Room 3130 | 805.893.2929 | http://oiss.sa.ucsb.edu/oiss-home
OISS provides immigration support for the UCSB community, advising for international students, and cultural programming.

Academic Initiatives
Number: 805.893.2720 | http://academics.sa.ucsb.edu/
Student Affairs Academic Initiatives facilitates student academic and leadership opportunities, and community engagement.