



# USC

**University of Southern California**  
**ISE 225 – Foundations of Data Analysis**  
**Spring 2024**

**Time:** TTH 10:00-11:50 pm

**Location:** WPH 103

**Instructor:** Yalda Khashe (She, her, hers)

**Office:** <https://usc.zoom.us/my/yaldakhashe>

**Office Hours:** By appointment on Wednesdays 2-3:30pm

**Contact Info:** [khashe@usc.edu](mailto:khashe@usc.edu)

**Teaching Assistant:** TBD

**Office:**

**Office Hours:**

**Contact Info:**

**Catalog Course Description:**

Sampling distributions; confidence intervals and hypothesis testing; analysis of variance; regression; data aggregation; prediction and classification

**Texts:**

*Engineering Statistics*, by D. Montgomery, G. Runger, and N. Hubele, Wiley, 5<sup>th</sup> edition, ISBN: ES8-0-470-63147-8

**Supporting Texts:**

*Statistics for Business and Economics*, by D.J. Camm, et. al, 15<sup>th</sup> edition (2020), ISBN: 978-0-357-71585-7

*An Introduction to Statistics with Python: With Applications in the Life Sciences* by T. Haslwanter, 2<sup>nd</sup> edition (2022). Springer International Publishing AG. ISBN: 978-3-030-97371-1

**Course Expectations and Policies:**

***Course Expectations and Netiquette:*** To ensure a cooperative learning environment, each student is expected to read the text before each class meeting time, and prepare to actively participate during class discussions, team-related activities, presentations, and writings.

Netiquette is network etiquette; a set of rules that encourages appropriate and courteous online behavior. The list of “Netiquette Rules for Class” is included on page 5 of this syllabus. Students are expected to engage in behaviors that enhance the learning environment. Our goal is to optimize the learning experience for all the students; therefore, disruptive behaviors are prohibited and will not be tolerated.

***Participation and Attendance Policy:*** It is expected that students will attend class regularly and participate in the class discussion throughout the semester. Participation involves actively listening and volunteering answers to questions and moving the discussion

along toward a shared understanding. The participation grade will be assigned at the end of the semester based on objective (contribution to class discussions, interaction with TA/Instructor inside and outside the classroom) and subjective (contributing meaningful questions/answers, illustrating comprehension of course material) assessment by the instructor. The participation rubric is included at the end of this syllabus.

The participation grade will be assigned at the end of the semester, and 50% of the final participation grade is based on the in-class exercises and case studies. There is no make-up or late submission for in-class assignments. Three lowest grades will be dropped at the end of the semester.

**Recording Online Classes:** Students are responsible for the appropriate use and handling of these recordings under existing SCampus policies regarding class notes (<https://policy.usc.edu/scampus-part-c/>). You are not permitted to create your own class recordings without the instructor's permission. Violations of these policies will be met with the appropriate disciplinary sanction.

**Due Dates/Make-Up Work:** Exams must be taken as scheduled. Assignments are due as scheduled. Make-ups will be allowed only if the student has contacted the professor before the due date, detailing a serious problem. There is no make-up or late submission for in-class assignments. Make-up midterm should be scheduled before the next instruction session and cannot be taken before the scheduled exam. Travel plans do not count as documented emergencies. Please consult the course outline before making any plans. The final exam date/time cannot be rescheduled.

**Online Communication Policy:** Students are encouraged to contact the instructor by USC email and schedule a meeting during office hours. In the subject line, indicate the course number and a very brief summary of the email. Simple questions will be answered by email, but for more complex discussions students may be instructed to schedule a zoom meeting.

### **Grading:**

#### I. Letter Grades Table:

96-100	A	75-79	C+
91-95	A-	70-74	C
87-90	B+	65-69	C-
84-86	B	60-65	D+
80-83	B-	56-60*	D

\* Grades less than 56: F

The final grade will be based on the above table combined with the cluster analysis of all the students' grades. Which will be explained in detail in the first class session.

#### II. The final course grade will be determined based on the following weights:

Exam 1 .....	22 %
Exam 2 .....	23 %
Final Exam.....	25 %
Homework/Case Study .....	20 %
Participation/in-class exercises.....	10 %

According to USC policy: “No student is allowed to retake a final examination or do extra work in a course after the semester has ended for purposes of improving [their] grade.<sup>1</sup>”

**Exams:** Exams consist of true/false, multiple-choice, short answers and essay questions. If you cannot take an exam on the scheduled date and time, you must provide documents from a responsible party (doctor, court, police, etc.) and you must arrange to take the exam before the following class meeting. The final exam date/time is set USC and cannot be rescheduled.

**Assignment Submission:** Homework descriptions will be posted on blackboard and assignments are due at the beginning of the class and should be submitted online through Blackboard. Electronic submission must be in MS Office formats.

Since creating, analytical, and critical thinking skills are part of the learning outcomes of this course, all assignments should be prepared by the student working individually or in groups. Students may not have another person or entity complete any substantive portion of the assignment. Developing strong competencies in these areas will prepare you for a competitive workplace. Therefore, using AI-generated tools is prohibited in this course, will be identified as plagiarism, and will be reported to the Office of Academic Integrity.

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<sup>1</sup> [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://esdcomm.usc.edu/arr/forms/ARR\\_Grade\\_Handbook.pdf](chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://esdcomm.usc.edu/arr/forms/ARR_Grade_Handbook.pdf)

## Tentative Course Outline<sup>2</sup>:

Week of		Topics	Assignments	Readings <sup>3</sup>
01	Jan 8	Introduction and Logistics of the course The Role of Statistics in Engineering	-	<b>CH1-DM</b> (sections 1-5)
02	Jan 15	Data Summary and Descriptive Statistics	-	<b>CH3-JC</b>
03	Jan 22	Review of Normal Distribution, Functions of Random Variables, Central Limit Theorem	<b>Homework 1</b>	<b>CH6-JC</b>
04	Jan 29	Sampling and Sampling Distributions	-	<b>CH3-DM</b>
05	Feb 5	Interval Estimation & Hypothesis Testing	<b>Homework 2</b>	<b>CH4-DM</b> (section 3)
06	Feb 12	<i>Exam Review</i> <b><u>February 15 – Exam 1</u></b>	-	
07	Feb 19	Inference on the Mean of a Population	-	<b>CH4-DM</b> (sections 4-5)
08	Feb 26	Inference on a Population Proportion	-	<b>CH4-DM</b> (section 7)
09	March 4	Two-sample analysis	<b>Homework 3</b>	<b>CH5-DM</b> (sections 1-4)
10	March 11	<b><i>Spring Recess - University Holiday</i></b>	-	
11	March 18	<i>Exam Review</i> <b><u>March 21 – Exam 2</u></b>	<b>Homework 4</b>	
12	March 25	Analysis of Variance (ANOVA)	-	<b>CH5-DM</b> (sections 8) <b>CH13-JC</b>
13	April 1	Simple Linear Regression	-	<b>CH6-DM</b> (section 2)
14	April 8	Multiple Linear Regression	<b>Homework 5</b>	<b>CH6-DM</b> (section 3-4)
15	April 15	Residual Analysis and Logistics Regression	-	<b>CH15-JC</b>
16	April 22	<i>Case Study (In-class Session)</i> <b><i>Final Review</i></b>	<b>Homework 6</b>	
<i>Tuesday,</i> <i>May 7</i>		<b><u>Final Exam (11 am-1 pm)<sup>4</sup></u> - Mandated by USC Schedule</b>		

### **NOTE:**

Course materials and grades will be posted on the Blackboard page. Please make sure that you have access to the blackboard and your **USC account** is up and running.

<sup>2</sup> Schedule may be revised to accommodate the content and pace of the class learning process. Due dates and case studies are subject to change.

<sup>3</sup> Engineering Statisticians: DM, Statistics for Business and Economics: JC

<sup>4</sup> **Confirm the time and date of the exam on the USC website.**

### **Netiquette Rules for Class**

Netiquette is network etiquette; a set of rules that encourages appropriate and courteous online behavior.

- Above all, show respect to your peers and the instructor.
- Respect the opinions of others, regardless of how much you disagree.
- If you are writing an email or discussion post in anger, the content of your text will probably come off as disrespectful. Give yourself time to calm down and show respect.
- Reflect kindness and concern for your colleagues, you never know when someone else is having the worst day of their life.
- Allow others to save face. When possible, allow others the option of coming to the same conclusion, rather than pushing an opinion or answer on them. Instead of saying, "That's not right, it should be purple," consider saying this instead, "Would purple be a better color in this situation?"
- Address your instructor with their full title (e.g. Professor or Dr.) unless they explicitly tell you otherwise.
- Let others know how you would like to be addressed and address others as they would like to be addressed.
- Limit your use of the exclamation point.
- Avoid using all caps. IT IS COMMONLY INTERPRETED AS YELLING.
- Humor is difficult to interpret in text-based communication. Consider avoiding it in professional and academic communication.
- Check your spelling and grammar before hitting send or submit. This is an academic community and part of being professional is checking and double-checking your work.
- Use professional language and avoid using social media language and characters (i.e. don't use slang, text shortcuts, such as "u" instead of "you," emojis, emoticons).
- Use appropriate fonts.
- Use appropriate font-size: 12 font for papers (you can use 10 for tables); 11 or 12 in emails or discussion board posts.
- In emails, be brief. After greetings, put the most important point in the first sentence. Do not make the reader get halfway (or all the way) through the email before you present the reason for the email.
- In the discussion board, expand on your thoughts. Explain why you agree with them or why you think it's a great post.
- Give details to your discussion post. What was your source and what pages were you looking at?

A more comprehensive list of communication norms is posted on the course page on Blackboard.

## Participation Rubric

Excellent Performance	Fair / Average Performance	Unacceptable Performance
<ul style="list-style-type: none"> <li>• Initiates information relative to topics discussed.</li> <li>• Accurately exhibits knowledge of assignment content.</li> <li>• Clarifies points that others may not understand.</li> <li>• Shares personal experiences or opinions related to the topic.</li> <li>• Offers relevant/succinct input to class.</li> <li>• Actively participates in labs and class exercises.</li> <li>• Demonstrates ability to apply, analyze, evaluate &amp; synthesize course material.</li> <li>• Demonstrates willingness to attempt to answer unpopular questions.</li> <li>• Builds on other students' contributions</li> </ul>	<ul style="list-style-type: none"> <li>• Participates in group discussions when asked.</li> <li>• Demonstrates knowledge of course material.</li> <li>• Offers clear, concise, "good" information on class assignments.</li> <li>• Offers input, but tends to reiterate the intuitive</li> <li>• Attends class regularly</li> </ul>	<ul style="list-style-type: none"> <li>• Fails to participate even when specifically asked.</li> <li>• Gives no input to discussions.</li> <li>• Does not demonstrate knowledge of the readings.</li> <li>• Shows up to class: does nothing.</li> <li>• Distracts group/class.</li> <li>• Irrelevant discussion</li> </ul>

### Statement on Academic Conduct and Support Systems:

**Academic Integrity:** The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s).

Other violations of academic integrity include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), collusion, knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university. All incidences of academic misconduct will be reported to the Office of Academic Integrity and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see [the student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#). Please ask your instructor if you are unsure what constitutes

unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

***Students and Disability Accommodations:*** USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](http://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

***Support Systems:***

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline is comprised of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-5086 or (213) 821-8298

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu)

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.