MATH D010 (25Y) Introductory Statistics Course Syllabus

Fall 2024

Course Description:

This course is an introduction to data analysis making use of graphical and numerical techniques to study patterns and departures from patterns. The student studies randomness with an emphasis on understanding variation, collects information in the face of uncertainty, checks distributional assumptions, tests hypotheses, uses probability as a tool for anticipating what the distribution of data may look like under a set of assumptions, and uses appropriate statistical models to draw conclusions from data. The course introduces the student to applications in fields, such as engineering, business, economics, medicine, education, social sciences, psychology, the sciences, and those pertaining to issues of contemporary interest. The use of technology (computers or graphing calculators) will be required in certain applications. Where appropriate, the contributions to the development of statistics by men and women from diverse cultures will be introduced. This Statistics course is a required lower-division course for students majoring or minoring in many disciplines such as data science, nursing, business, and others.

Class Modality:

This class is a 5-unit hybrid class with:

- 4 one-hour meetings in-person Monday through Friday 11:30-12:20
- 1 hour TBA ("to be arranged") - the activities for this hour will vary from week to week

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Student Learning Outcomes:

Upon successful completion of the course, students will be able to:

1. Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.
2. Identify, evaluate, interpret and describe data distributions through the study of sampling distributions and probability theory.
3. Collect data, interpret, compose and evaluate conjectures, and communicate the results of random data using statistical analyses such as interval and point estimates, hypothesis tests, and regression analysis.

Course Content:

1. Displaying and Analyzing Data with Graphs
2. Descriptive Statistics
3. Populations and Sampling
4. Probability
5. Discrete Random Variables
6. Continuous Random Variables
7. The Central Limit Theorem
8. Point Estimation and Confidence Intervals
9. One Population Hypothesis Testing
10. Two Populations Inference
11. Chi-square Tests for Categorical Data
12. One Factor Analysis of Variance (ANOVA)
13. Correlation and Linear Regression

Textbook, Workbook, and Calculator:

Great news: Your textbook for this class is available for **free**!

Title: Inferential Statistics and Probability
Author: Maurice A. Geraghty
Link: http://nebula2.deanza.edu/~mo/holistic/HolisticStatisticsCurrent.pdf.
We will use a workbook to take notes in (download: HolisticStatisticsWorkbook-FirstEdition-1.pdf Download HolisticStatisticsWorkbook-FirstEdition-1.pdf). The workbook is essential to keep the course materials organized for yourself throughout the quarter. You may either:

- Print this document out (double-sided, as it's long) and take notes
- Open up this document on a tablet and take notes

No particular calculator is required for this class. However, we will use a variety of technology sources on the Internet for statistical calculations throughout the quarter.

Expectations:

- **Communication**: I expect you to log into Canvas every day and check for any messages and announcements. Feel free to contact me via Canvas message (preferred) outside of class with any issues related to the class. Alternatively, you can email me at bambhaniadoli@fhda.edu. You do not have to wait until the next class meeting. You can expect a response within 24 hours on weekdays and within 48 hours on the weekend. If you don't get a reply back, please feel free to send me a message again.
- **Attendance and Engagement**: I expect you to attend each class and be fully engaged with the class throughout the quarter. I will look for your participation during class, during office hours, and through the submission of assignments. Be sure to submit all assignments. Please note that if you're not attending class and/or not submitting the assignments during the first two weeks of class in both classes, and not communicating with us, we will assume that you are not interested in the taking the classes and may drop you!
- **Feedback**: Any feedback on your discussions, quizzes and exams will be provided as either annotation/comment in Canvas or on paper. If you need additional feedback regarding grading (especially automatically graded items such as homework), please email/message me directly about that assessment. I will aim to grade all items within a few days of submission, but you can expect most assignments and assessments to be graded within 1 week of submission.

Protecting self and others from COVID and other viruses:

Since this is primarily an in-person class, please familiarize yourself with and follow COVID-related protocols for De Anza College.

- Covid-19 Information: https://www.deanza.edu/healthservices/covid-19.html.

- If you become infected with Covid during the quarter, you must fill out the Student Self-Reporting Form at https://www.deanza.edu/covid/student-form.html. and inform your instructor.

Other viruses:

- Please wear a mask to protect others if you're getting sick or recovering from the flu or another respiratory virus.
- Don't hesitate to put on a mask (there should be some in the classroom) for your safety at any time.

Office Hours:

- Monday and Wednesday 10-11am in PST Village (S-55)
- Tuesday and Thursday 1:30-2:00pm in office (S-43A)
- Friday 12-1pm on Zoom (https://fhda-edu.zoom.us/j/83531635102)
- Or, by appointment (Send me a Canvas message or email bambhaniadoli@fhda.edu to set up)

Activities and Assessments:

- **Lectures**: We will cover new content in class Monday through Thursday during the lecture.
- **Online HW**: Most weeks, you will have one or two online HW sets due. We have an online HW for each chapter, so the due date for them depends roughly on when we completed that chapter.
- **Discussions**: Almost each week when we don't have a lab, we will have a Canvas discussion. They will be due on Fridays.
- **Labs**: We will have 3 labs throughout the quarter.
- **Quizzes**: On the weeks you don't have an exam, you will have a quiz on the previous week's material.
- **Exams**: We will have 2 midterm exams, and a final exam. Please look at the calendar at the bottom of this page and make sure you have the dates down for these so you don't miss them.

Homework, Discussions and Labs:

The best way to succeed in any math class is doing all of the assigned work correctly and in a timely manner, making sure you really understand what you are doing! Focus on your understanding of each concept, how it relates to the course concepts and how it's applied outside of the clas, not just on following a procedure or learning a skill! Time spent on the homework, discussions and labs will directly benefit you on quizzes and exams.

Online Homework: You will have online homework for each chapter we cover. The links are under the weekly activities in Modules. You will have 3 late passes that give you a 24-hour extension on a homework assignment.

Canvas Discussions: Almost every week, there will be a topic of discussion. The due date will be at the end of the week - typically on Fridays. These topics (except for Week 1) are designed to help you think critically about statistics and express your analysis, conclusions or opinions. They will often involve the history and practice and application of statistics.

Labs: We will have 3 technology-based labs in this class in which you will work with a larger data set, or explore statistical concepts using the statistical software called Minitab. You will be provided free access to the software through a license purchased by the college. You may work on the labs alone or with one partner.

Quizzes:

We will have **seven** 20-minute quizzes (see the calendar). They will be on Mondays (or Tuesday if Monday is a holiday). These will be similar to in-class examples and your homework. IMPORTANT: There will be NO MAKEUPS for any of the quizzes. However, your **lowest two** quiz scores will be dropped.

You will be allowed a 3" x 5" notecard for a quiz. You may use a calculator of any type, as well as any technology for statistical calculations, such as a phone or your tablet or laptop. Let me know ahead of time if you need help getting a device.

Exams:

We will have **two** midterm exams. We will also have a cumulative final exam. They will be similar to in-class examples, homework, and quizzes. See the calendar at the bottom of this page for the dates.

There will be NO MAKEUPS for any of the exams. If you miss an exam for any reason, your final exam will replace that exam score. Also, the final exam score will replace one midterm exam score if the midterm exam score is lower.

You will be allowed **one** 8-1/2" x 11" sheet (both sides) worth of notes for exam exams, and **two** such sheets for the final exam.

You may use a calculator of any type, as well as any technology for statistical calculations, such as a phone or your tablet or laptop. Let me know ahead of time if you need help getting a device.

IMPORTANT: In case of an unforeseen emergency or illness due to which you cannot take an exam, please get in touch with me immediately – we can look for a solution. If this happens for the final exam, and you are able to provide me with a sufficient proof, that will likely result in an 'Incomplete'.

Evaluation:

Your final grade will be computed as follows:

Point Values of Assignments		
Category		**Points**
Weekly Discussions	Top 6 @ 5 points each	30
Online Homework	13 @ 10 points each	130
Labs	3 @ 20 points each	60
Participation and Attendance		20
Quizzes	Top 5 @ 20 points each	100
Exams	2 @ 75 points each	150
Final Exam		110
TOTAL		600

Letter grade based on overall percentage	
Overall percentage	Your grade will be at least
97 % or greater	A+
92% to less than 97%	A
90% to less than 92%	A-
87% to less than 90%	B+
82% to less than 87%	B
80% to less than 82%	B-
75% to less than 80%	C+
70% to less than 75%	C
55% to less than 70%	D
less than 55%	F

Help:

1. Your classmates are a great resource. Work with one another during class, and ask and provide help using the Canvas discussion titled Questions Discussion Board. It's also worth extra credit!
2. Visit me during office hours, or Canvas message me with questions, or to make an appointment. On online homework, you can message me by using 'Ask My Instructor' button.

3. Get help from De Anza's Math Student Success Center in Room S-43 or on Zoom. See details at http://deanza.edu/studentsuccess/ .
4. Use NetTutor (available 24/7) for help. It's accessible through the left navigation in Canvas.
5. To get help with tech equipment, food and financial assistance, health services, resources for undocumented students, etc., check out https://www.deanza.edu/services/.

Academic Integrity:

All students are expected to be academically honest throughout the term. Academic integrity is essential to the functioning of educational institutions. All work that you submit must be your own. Any instances of cheating or plagiarism will result in disciplinary action, which may include recommendation for dismissal. You are encouraged to work together, but submitting someone else's work as your own is never acceptable! Cheating will result in getting a 0 on the assignment or assessment, an 'F' in the course, or dismissal from the class. Also, each incident of cheating will be reported to the Dean of the Physical Science, Mathematics and Engineering Division. Please see the De Anza College's page on Academic Integrity: https://www.deanza.edu/policies/academic_integrity.html. Also, please watch this video that's designed to help you understand what academic honesty means: https://www.youtube.com/watch?v=4unoOe-IoeY.

Disability Notice:

If you feel that you may need an accommodation based on the impact of a disability, please contact me privately to discuss your specific needs. Also, please contact Disability Support Programs & Services through https://www.deanza.edu/dsps/. for information or questions about eligibility, services and accommodations for physical, psychological or learning disabilities.

Miscellaneous:

In any math class, your goal should be to get ownership of the material. This means that you understand the concepts, can demonstrate the skills, and explain the concepts and skills to someone that doesn't. Here are some tips to help you succeed.

1. **Stay on schedule.** Attend each class, stay engaged, and keep up with your assignments. Don't wait until the deadline to do it. This will allow you the chance to ask questions in a timely manner.
2. **Take notes**. Be diligent about taking notes. Taking notes will allow you to focus on the material better. Writing aids memory so you are more likely to retain the material. You can take notes on a printed copy, or annotate electronically. Having good notes will help when you study for quizzes and exams, and during quizzes and exams.
3. You must **do the homework, discussions and labs diligently**. Make it your goal is to get an ownership of the material in this class, and to be able to do the work without help. **Productive struggle** is not only perfectly normal, but essential in learning mathematics! When you encounter a difficult problem or a concept, remember to sweat through it yourself first. Don't get help immediately, and certainly don't skip it!
4. **Use the Questions Discussion Board** to reach reach out to your classmates with questions outside of class. Learning collaboratively is an important college skill. **EXTRA CREDIT: Asking a question or answering a question gets you 1 extra credit point - up to a total of 5 maximum for the quarter.**
5. **Use the textbook as a resource.** Occasionally, the lecture examples may not be enough to give you a complete idea of the material. I encourage you to read the textbook first before accessing other resources.
6. **Review your notes** regularly, and especially before quizzes and exams!
7. **Ask questions**! Whether it's to your classmates, me, or a tutor, get your questions answered in a timely manner.
8. **Make summary review sheets or notecards** of important concepts for yourself throughout the term to make sure you have the key concepts, facts and skills organized in your head. This help you for quizzes and exams, but more importantly, synthesizing the material for this class will help you retain it for the future.
9. **The quarter passes by faster than expected** and it's almost impossible to catch up if you fall more than a couple of days behind. So, try not to fall behind, and if you do, catch up as soon as possible! Don't hesitate to ask me for help.
10. **Practice discipline**! Succeeding in a college class requires personal discipline. It's quite easy to put things off until later, distract oneself with social media and other apps while doing class activities, etc. A life skill we all need to practice is to be mindful of what you are giving your attention to. Think carefully about your priorities, and give the most time and attention to your

biggest priorities. Don't put off working on them because the task at the moment is hard or unpleasant. Learning anything that's worthwhile requires a sustained effort and discipline! And that practice is what ultimately leads to personal growth.

Course Calendar:

As we progress through the class, pay careful attention to the course calendar. This will give you an idea of exactly where we are in the class.

Math 10 Introductory Statistics - 11:30am Mon-Thur - Fall 2024
Tentative Calendar

	Chapters	Monday	Tuesday	Wednesday	Thursday	Friday (no class)
Week 1	**Ch 1, Ch 2**	23-Sep Introduction Ch 1	24-Sep Ch 1	25-Sep Ch 1 Ch 2	26-Sep Ch 2	27-Sep **Ch 1 HW due** **Disc 1 due**
Week 2	**Ch 2, Ch 3**	30-Sep **Quiz 1** Ch 2	1-Oct Ch 2	2-Oct Ch 2 Ch 3	3-Oct Ch 3	4-Oct **Ch 2 HW due** **Disc 2 due**
Week 3	**Ch 3, Ch 4**	7-Oct **Quiz 2** Ch 3	8-Oct Ch 3 Ch 4	9-Oct Ch 4	10-Oct **Ch 3 HW due** Ch 4	11-Oct ***Lab 1 due***
Week 4	**Ch 5**	14-Oct **Ch 4 HW due** **Quiz 3** Ch 5	15-Oct Ch 5	16-Oct Ch 5	17-Oct Review/ Catch-up	18-Oct **Ch 5 HW due** **Disc 3 due**
Week 5	**Ch 6, Ch 7**	21-Oct **Exam 1** **(Ch 1-5)**	22-Oct Ch 6	23-Oct Ch 6	24-Oct Ch 6 Ch 7	25-Oct **Ch 6 HW due** **Disc 4 due**
Week 6	**Ch 7, Ch 8**	28-Oct **Quiz 4** Ch 7	29-Oct Ch 7	30-Oct Ch 8	31-Oct Ch 8	1-Nov **Ch 7 HW due** **Disc 5 due**
Week 7	**Ch 8, Ch 9**	4-Nov **Quiz 5** Ch 8	5-Nov Ch 8 Ch 9	6-Nov Ch 9	7-Nov **Ch 8 HW due** Ch 9	8-Nov **Disc 6 due**
Week 8	**Ch 9**	11-Nov **Veterans Day** **HOLIDAY**	12-Nov **Quiz 6** Ch 9	13-Nov Ch 9	14-Nov Ch 9	15-Nov **Ch 9 HW due** ***Lab 2 due***
Week 9	**Ch 10**	18-Nov **Exam 2** **(Ch 6-9)**	19-Nov Ch 10	20-Nov Ch 10	21-Nov Ch 10	22-Nov **Ch 10 HW due** **Disc 7 due**
Week 10	**Ch 11, Ch 12**	25-Nov Ch 11	26-Nov Ch 11	27-Nov Ch 11	28-Nov **Thanksgiving** **HOLIDAY**	29-Nov **Thanksgiving** **HOLIDAY**
Week 11	**Ch 13**	2-Dec **Quiz 7** Ch 12	3-Dec Ch 12 Ch 13	4-Dec **Ch 12 HW due** Ch 13	5-Dec Ch 13	6-Dec **Ch 13 HW due** ***Lab 3 due***
Finals Week		9-Dec **Final Exam** **11:30 - 1:30**	10-Dec	11-Dec	12-Dec	13-Dec

Student Learning Outcome(s):

• Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by constructing and/or evaluating tables, graphs, and numerical measures of characteristics of data.
• Identify, evaluate, interpret and describe data distributions through the study of sampling distributions and probability theory.
• Collect data, interpret, compose and evaluate conjectures, and communicate the results of random data using statistical analyses such as interval and point estimates, hypothesis tests, and regression analysis.

Office Hours:

M,W	10:00 AM	11:00 AM	In-Person	S-55 (PST Village)
T,TH	01:30 PM	02:00 PM	In-Person	MLC downstairs lobby
F	12:00 PM	01:00 PM	Zoom	