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Basic Course Information

Semester:	Fall 2022	Instructor Name:	Allyn Leon
Course Title & #:	Math 119, Elementary Statistics	Email:	allyn.leon@imperial.edu
CRN #:	10812, 10051, 10777, 10052	Webpage (optional):	imperial.instructure.com
Classroom:	N/A	Office #:	2761 (but home for now)
Class Dates:	08/15/2022 - 12/10/2022	Office Hours (Zoom):	Monday through Thursday: 12:00 pm to 1:00 pm
Class Days:	N/A	Office Phone #:	760-355-6523
Class Times:	N/A	Emergency Contact:	Email me or call/text office phone
Units:	4	Class Format:	Online

Course Description

The use of probability techniques, hypothesis testing, and predictive techniques to facilitate decision-making. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-square and t-tests; and supervised use and practice in the application of technology for statistical analysis including the production of graphics, finding confidence intervals, test statistics, and regression lines, as well as the interpretation of the relevance of the statistical findings; Probability Theory, such as counting principles, conditional probability and the Poisson distribution. Applications using data from disciplines including business, social sciences, psychology, life science, health science, and education. (C-ID MATH 110) (CSU/UC)

Course Prerequisite(s) and/or Corequisite(s)

Appropriate placement as defined by AB705 or, MATH 098 or MATH 091 with a grade of "C" or better.

Student Learning Outcomes

By the end of this course, given a problem or a set of problems, the student will demonstrate problem solving strategies by identifying an appropriate method to solve a problem, correctly set up the problem, perform the appropriate analysis and computation, and share their interpretation of the conclusion or the outcome, using correct grammar or in an oral presentation.

Textbooks & Other Resources or Links

Recommended Textbook: Elementary Statistics Using Excel, 6th Edition, by Mario Triola, Pearson Publisher.
The OPTIONAL textbook is available at the bookstore or online. There are also numerous online resources in Canvas.

Calculator: A basic calculator, like a TI-30 (costs around $10) is recommended, or you can go with a graphing calculator, like the TI-83 or TI-84, and there are also various apps that you can use instead; it really depends on what other math or science classes you plan on taking later on. You NEED a calculator of some sort to do the work on the tests.

Course Objectives

Through various activities and assessments:
1. Distinguish among different scales of measurement and their implications.
2. Interpret data displayed in tables and graphically.
3. Apply concepts of sample space and probability.
4. Calculate measures of central tendency and variation for a given data set.
5. Identify the standard methods of obtaining data and identify advantages and disadvantages of each.
6. Calculate the mean and variance of a discrete distribution.
7. Calculate probabilities using normal and t-distributions.
8. Distinguish the difference between sample and population distributions and analyze the role played by the Central Limit Theorem.
9. Construct and interpret confidence intervals.
10. Determine and interpret levels of statistical significance including p-values.
11. Interpret the output of a technology-based statistical analysis.
12. Identify the basic concept of hypothesis testing including Type I and II errors.
13. Formulate hypothesis tests involving samples from one and two populations.
14. Select the appropriate technique for testing a hypothesis and interpret the result.
15. Use linear regression and ANOVA analysis for estimation and inference, and interpret the associated statistics.
16. Make use of Chi-square distributions to analyze counts.
17. Use appropriate statistical techniques to analyze and interpret applications based on data from disciplines including business, social sciences, psychology, life science, health science, and education.
18. Apply concepts of probability theory, such as counting principles, conditional probability and the Poisson distribution.

Course Requirements and Instructional Methods

Grades: Your grade in this class will be based entirely on the math skills you learn this semester. Common grading elements such as quizzes, homework, participation, effort, extra credit, and turning assignments in 'on time' will not be part of your grade. This will likely be very different from what you are used to, but the grading system outlined below is designed to be bias-resistant, motivating, and an accurate representation of what you have learned in this class. This may sound a little scary, but keep reading!

Quizzes: Each unit (or module) has a set of specified skills to learn, along with study materials and "quizzes" to help you practice these skills. There are four general units in the course, and each unit has several modules. Each module has one quiz. Quizzes are your chance to **practice**, to make mistakes, to learn. Making mistakes is part of the process of learning math and is expected. For this reason, **quizzes will only count as a small portion of your grade**. There are an **unlimited** number of attempts on quizzes and these assignments will be available for the entirety of the course. There are due dates listed for each of these assignments to **help keep you on pace** to complete the class by the last day.

Project(s): There will be four short projects that may involve the use of technology (such as Google Sheets, Minitab, StatDisk, or Microsoft Excel). More information will be provided through Canvas. These projects will fulfill some of the skill objectives and a rubric will be provided (in Canvas) detailing how to fulfill the requirements for this category. There will be one project aligned with each main unit (there are four units).

Exams: Each unit will end with an exam on the skills covered. There are four main units, so there will be **four unit exams**, PLUS a **final exam**. The exams are your chance to show you have learned the skills that your grade will be based on. You will **NEED to submit your work for MOST problems**, so make sure to review the rubric for each skill and show work that

explains your solution. If you do not submit or upload work for your exam exercises I will not be able to verify the skill completed. Exam grades will "count" once the written work is graded. **How to show your work?** You will take pictures of the work you did and upload them into Canvas, or create a document that has the steps and upload that.

Note: If you do not have written work uploaded for your exam, your score will not count and will be recorded as a zero.

If you have not yet mastered a skill in the exam, you will have additional opportunities to show you have learned the material, either in a project, an exam retake or when the skill is revisited in a future exam (depending on the skill). Before attempting a retake exam, you will be expected to study, work on quizzes, and seek out tutoring help. If you show improvement on a retake or future exam, then your grade on that skill will be replaced to reflect your most recent work. Details on retakes will be in one of the orientation videos in Canvas. Please check those out.

Note: Do not log out in the middle of an exam or your score will be automatically recorded. If you run into a problem with this, please contact me right away.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

Your grade will be calculated based on the following items:

10 Quizzes (take 13, top 10 count) @ 10 points each	100 points	~14.3%
4 Projects @ 25 points each	100 points	~14.3%
5 Exams @ 100 points each	500 points	~71.4%
Total	*700 points*	*100%*

Your final grade will be based on the following points and percentages:

90% to 100%	630-700 points	A
80% to 89%	560-629 points	B
70% to 79%	490-559 points	C
60% to 69%	420-489 points	D
Below 60%	Below 420 points	F

The **Canvas Gradebook** is where you want to go to check your grades and progress. You can do this at any time to get an idea of how you are doing in the class.

Other Course Information

Last day to add the class: Saturday 08/27/2022
Last day to withdraw from the class with a "W": Saturday 11/05/2022 (Remember, Remember the 5th of November!)

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit http://www.imperial.edu/studentresources or click the heart icon in Canvas.

Anticipated Class Schedule/Calendar

Date or Week	Activity, Assignment, and/or Topic	Assignment Dates
Week 1 Aug 15 - Aug 21	Introduction	SYLLABUS QUIZ DUE 08/18 NO EXCEPTIONS
Week 2 Aug 22 - Aug 28	Sampling and Data, Module 1	Quiz 1
Week 3 Aug 29 - Sept 4	Descriptive Statistics Part 1, Module 2	Quiz 2
Week 4 Sept 5 - Sept 11	Descriptive Statistics Part 2, Module 3	Quiz 3 Project 1
Week 5 Sept 12 - Sept 18	Probability Topics Part 1, Module 4	Quiz 4 Unit Exam 1
Week 6 Sept 19 - Sept 25	Probability Topics Part 2, Module 5	Quiz 5
Week 7 Sept 26 - Oct 2	Discrete Random Variables, Module 6	Quiz 6
Week 8 Oct 3 - Oct 9	Normal Distributions, Module 7	Quiz 7 Project 2
Week 9 Oct 10 - Oct 16	Confidence Intervals, Module 8	Quiz 8 Unit Exam 2
Week 10 Oct 17 - Oct 23	Hypothesis Testing for 1 Sample, Module 9	Quiz 9
Week 11 Oct 24 - Oct 30	Hypothesis Testing for 2 Samples, Module 10	Quiz 10
Week 12 Oct 31 -Nov 6	Hypothesis Testing Roundup	Project 3 Unit Exam 3
Week 13 Nov 7 - Nov 13	Correlation and Regression, Module 11	Quiz 11
Week 14 Nov 14 - Nov 20	Analysis of Variance, Module 1	Quiz 12
Week 15 Nov 21 - Nov 27	THANKSGIVING BREAK	THANKSGIVING BREAK
Week 16 Nov 28 - Dec 4	Review for Final	Project 4 Unit Exam 4
Week 17 Dec 5 - Dec 11	Final Exam	Final Exam

THE SYLLABUS QUIZ IS DUE BY 11:59 PM ON THURSDAY 08/18/2022. IF THE SYLLABUS QUIZ IS NOT COMPLETED BY THEN, YOU WILL BE DROPPED FROM THE CLASS.

Course Policies

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.
- *Attendance in an online class is more than just logging in*
    - o   You will need to make sure that you log in and check announcements regularly
    - o   There are weekly readings and assignments that need to be done in a timely manner
    - o   There will be exams completed online in Canvas as well
    - o   **The Syllabus Quiz counts as an attendance check for the first week**
    - o   **The Syllabus Quiz is due by 11:59 pm on Thursday, 08/18/2022**
    - o   **If you do not complete The Syllabus Quiz on time, you will be dropped from the class**