Math 1350 Course Map

Course Instructor: Verónica Murga

Course Goals:

1. Use descriptive statistics to describe sample data appropriately.
    a. Generate and interpret common graphics (bar chart, pie chart, histogram boxplot, scatterplot) to describe data
    b. Compute and interpret common statistics (mean, standard deviation, 5-number summary, correlation, regression slope and intercept) to describe data.
2. Present concepts of probability.
    a. Able to apply probability rules to find probability of compound event.
    b. Able to find probability for an event from common distributions (Normal and Binomial)
    c. Interpret sampling distribution, and able to use Central Limit Theorem to find distribution of a sample mean.
3. Identify Sample and Population
    a. Identify sample and Population for any given research
    b. Interpret why random sampling is required in order to avoid bias.
    c. Differentiate between population parameters and sample statistics.
4. Use appropriate inferential statistics to conclude toward the population of research interest.
    a. Identify the two common processes of inferences (Confidence Interval and Hypothesis test)
    b. Be able to use appropriate inference procedure for different research design. (z-CI and t-CI, z-test, t-test, Paired t and Two sample t test)
    c. Interpret types of error from hypothesis test.

Module	Module Objectives (CO Alignment)	Learning Materials	Activities	Assessments
Week 1: Getting Started	Familiarize ourselves with the: • Instructor, • DACC's Mental Health and Social Services, • DACC's COVID-19, • Syllabus, • Week 0 module, • other students, • MyLab Statistics, and • DACC's tutoring services.	• Week 0 module • Week 1: Getting Started Page • Syllabus • Navigating the Course in Canvas videos • DACC Mental Health and Social Services and COVID -19 modules	1. Read the Week 0 module, DACC Mental Health and Social Services and COVID 19 modules and view all the links. 2. View a video to get to know me. Also, introduce yourself to the rest of the class. 3. Familiarize yourself with MyLab Statistics.	• Getting to Know Your Instructor • Test Your Knowledge: COVID-19 Reporting • Test Your Knowledge: DACC Mental Health Resources • Syllabus Quiz • Viewing the Week 0 module • Are you interested in ARC tutoring? • Discussion: Introduce Yourself! • My Lab Statistics orientation • Mock Quiz
Week 2: What is Statistics?	• learn the various ways that various data can be obtained through different sampling procedures (CLO 3a,b,c)	Chapter 1: Introduction to Statistics • Textbook • Instructor videos • Publisher videos	• Read/view chapter 1 learning materials • View my notes, for extra credit fill them out • Work on homework. • Develop two survey questions.	• My Lab Statistics Mock Quiz • Uploading Ch. 1 Notes • HW: Ch. 1 • Project: Survey Questions

Week 3: Exploring Data	summarize data using various graphical displays (CLO 1a)	Chapter 2: Exploring Data • Textbook • Instructor videos • Publisher videos	• Study and take Ch. 1 Quiz • Read/view chapter 2 learning materials • View my notes, for extra credit fill them out • Work on homework.	• Ch. 1 Quiz • Uploading Ch. 2 Notes • HW: Ch. 2
Week 4: Comparing Data	• summarize or describe the important characteristics of a data set (mean, standard deviation, etc.) (CLO 1b)	Chapter 3: Describing, Exploring & Comparing Data • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Reflect on how you did on Ch. 1 Quiz • Read/view chapter 3 learning materials • View my notes • View videos on using Statcrunch • Work on homework. • Enter Survey Questions in Statcrunch	• Reflection • Project: Survey Questions in Statcrunch • Quiz on Video b • Upload Chapter 3 notes. • Homework: Chapter 3: Describing, Exploring and Comparing Data
Week 5: Probability part a	calculate different types of probabilities (CLO 2a)	Chapter 4: Probability • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Find and analyze a misleading graph • Read/view chapter 4 learning materials • View my notes • Work on homework.	• Discussion: Misleading Graphs • Homework: Chapter 4: Describing, Exploring and Comparing Data (part a)
Week 6: Probability part b	calculate different types of probabilities (CLO 2a)	Chapter 4: Probability • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Study and take Ch.2 Quiz • Read/view chapter 4 learning materials • View my notes • Work on homework.	• Chapter 2 Quiz • Upload Chapter 4 notes • Homework: Chapter 4: Describing, Exploring and Comparing Data (part b)

Week 7: Discrete Probability Distributions	construct and analyze discrete probability distributions (CLO 2b)	Chapter 5: Binomial Distributions • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Read/view chapter 5 learning materials • View my notes • Work on homework.	• Discussion: Combinations • Upload Chapter 5 notes • Homework: Chapter 5: Discrete Probability Distributions
Week 8: Midterm Review	• Prepare for the Midterm • Randomly Select Students for our Survey (CLO 3b)	Midterm Review	• Prepare for the Midterm Exam • Randomly Select Students for your survey	• Discussion: Midterm Review • Survey: Randomly Selected Students • Midterm Review
Week 9: Midterm & Normal Distributions	• Take the Midterm Exam • construct and analyze normal probability distributions (CLO 2b) • Use the Central Limit Theorem to interpret a sampling distribution (CLO 2c)	Chapter 6: Normal Distributions • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Midterm Exam • Read/view chapter 6 learning materials • View my notes • Work on homework • Keep track of your responses and the responses to your survey	• Midterm Exam • Upload Chapter 6 notes • Chapter 6 homework • Survey: List of Missing Respondents • Survey: Your Responses
Week 10: Estimates & Sample Sizes	• construct and analyze normal probability distributions (CLO 2b) • Use inferential statistics, specifically confidence intervals to draw conclusions. (CLO 4a) • construct and analyze graphs using our survey data (CLO 1)	Chapter 7: Estimates & Sample Size • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Review concept of Normal Distributions • Read/view chapter 7 learning materials • View my notes • Reflection on how we are doing so far • Work on homework	• Discussion: Normal Distributions • Survey: Graphs • Upload Chapter 7 notes. • Chapter 7 homework • Midterm Reflection

Week 11: Hypothesis Testing	Use appropriate inferential statistics to conclude toward the population of research interest, specifically confidence intervals and one sample hypothesis testing of a proportion or a mean (CLO 4a,b,c)	Chapter 8: One Sample Hypothesis Testing • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Study and take Ch. 6 Quiz • Read/view chapter 8 learning materials • View my notes • Work on homework • Review concept of confidence intervals	• Chapter 6 Quiz • Upload Chapter 8 notes • Chapter 8 Homework • Discussion: Confidence Intervals
Week 12: Inferences from Two Samples	Use inferential statistics, specifically confidence intervals and hypothesis testing of two samples of either a proportion or a mean. (CLO 4a, 4b)	Chapter 9: Two Sample Hypothesis Testing • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Study and take Ch. 7 Quiz • Read/view chapter 8 learning materials • View my notes • Work on homework • Review concept of hypothesis test conclusions	• Chapter 7 Quiz (Gen Ed Assessment) • Upload Chapter 9 notes • Chapter 9 Homework • Discussion: Hypothesis Test Conclusions
Week 13: Correlation & Regression	• Given a set of data, we will plot it, see what type of linear correlation it has, perform a hypothesis test to determine if there is in fact a linear correlation. Finally, we will construct a line of best fit and use it, when appropriate, to make a prediction. (CLO 1b) • Analyze our survey data and draw conclusions using one sample hypothesis tests (CLO 4a, 4b)	Chapter 10: Linear Correlation & Regression • Textbook • Instructor videos • Publisher videos • Statcrunch videos	• Complete your hypothesis tests for your project. • Study and take Ch. 7 Quiz • Read/view chapter 8 learning materials • View my notes • Work on homework • Fill Out Instructor Course Evaluations	• Project: Survey: Hypothesis Testing • Upload Chapter 10 notes • Chapter 10 homework • Instructor Course Evaluations

Week 14 & 15: Final Review	• Prepare for the Final Exam • Do optional extra credit assignments	Final Exam Review	• (Optional) a. Find a statistical research article on a topic that interests you. b. Analyze it. • Study for the final & present assigned problem in the discussion for reviewing for the final.	• Final review discussion • Extra Credit: Scholarly Article • Extra Credit: Analysis of Scholarly Article
Week 16: Final Exam	Take the Final Exam		Final Exam	Final Exam