

San José State University
Urban and Regional Planning Department
URBP 204: Quantitative Methods
Spring 2022

Course and Contact Information

Instructor(s): Dr. Shishir Mathur

Office Location: Online

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Email: shishir.mathur@sjsu.edu

Office Hours: Friday 4 pm to 6 pm (call at 408-310-7856 or email in advance to request a zoom link) and by appointment

Class Days/Time: Monday 4:30 pm to 7:15 pm

Classroom: Zoom for on-line sessions and WSQ 208 for in-person sessions. To avoid zoom bombing, the zoom link is not shared on the syllabus. Instead, the instructor has shared the zoom link in a message through MySJSU and in a welcome note on the course's CANVAS web site.

Course CANVAS website: <https://sjsu.instructure.com/courses/1478010>

Course Description

Urban research design, measurement, selected statistical research tools and introduction to computer processing. Extensive treatment of survey research.

Course Format

Hybrid course. A mix of online instruction and in-person classes. Requires an electronic device, such as a computer, laptop or tablet, and internet connectivity that enables use of Zoom with video on. The weekly schedule notes the course modality for that week (on-line or in-person).

Course Web Page and MYSJSU Messaging

Course materials such as syllabus, lecture notes, assignment instructions, etc. are at:

<https://sjsu.instructure.com/courses/1478010>

You are responsible for regularly checking your email that you provided on MySJSU to learn of any updates.

For help with using CANVAS see [Canvas Student Resource page](#).

Course Learning Outcomes (CLOs)

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

- 1) Identify the overall strengths and weaknesses of quantitative, qualitative, experimental, and survey research methods; and assess which research method/s, given resource constraints, are most appropriate for answering a specific research question.
- 2) Develop research questions worthy of informing public policy, and identify the statistical tools appropriate for answering the research questions. The tools learned in this class are: Tests between Means of Different Groups, Tests Between Means of Related Groups, ANOVA, Factorial ANOVA, Correlation, One- and Two-Factor Chi Square; Ordinary Least Squares Regression; and Logistic Regression.
- 3) Develop survey research questions that conform to conventional best practices in survey design.
- 4) Critically evaluate the strengths and weaknesses of various non-probability and probability based sampling techniques.
- 5) Present quantitative data and results in text and graphics.

6) Identify the policy implications of statistical test results.

This course partially covers the following PAB Knowledge Components:

- 1e) The Future: relationships between past, present, and future in planning domains, as well as the potential for methods of design, analysis, and intervention to influence the future.
- 2a) Research: tools for assembling and analyzing ideas and information from prior practice and scholarship, and from primary and secondary sources.
- 2b) Written, Oral and Graphic Communication: ability to prepare clear, accurate and compelling text, graphics and maps for use in documents and presentations.
- 2c) Quantitative and Qualitative Methods: data collection, analysis and modeling tools for forecasting, policy analysis, and design of projects and plans.

Required Texts/Readings

Textbooks

a) Babbie, Earl R. 2012. *Practice of Social Research, 13th Edition*. Belmont: Wadsworth. (ISBN: 9781133049791)

You may also buy/rent the 10th edition of the book.

b) Salkind, Neil. 2017. *Statistics for People Who (Think They) Hate Statistics, 6th Edition*. Thousand Oaks: Sage. (ISBN: 978-1506333830). A paperback edition could be rented for about \$20.

You may also buy/rent the 2nd, 4th, or 5th edition of the book. For some reason the 3rd edition is different. Do not use it. You do not need to buy the book that comes with SPSS CD.

Recommended Readings

There is one recommend textbook for this course.

Agresti, Alan, and Barbara Finlay. 2008. *Statistical Methods for the Social Sciences, 4th edition*. New Jersey: Prentice Hall. (ISBN: 9780130272959). A paperback edition would cost approximately \$60. You may also use the 3rd edition of the book.

Other technology requirements / equipment / material

Personal computer, EXCEL and SPSS software, and good internet connection for work to be done outside the in-person class sessions and for the on-line class sessions.

Library Liaison

Name: Peggy Cabrera. Email: peggy.cabrera@sjsu.edu

Course Requirements and Assignments

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Your grade for the course will be based on six take home exercises and two engagement unit activities. You will be able to revise and re-submit the take home six exercises and earn up to 75% of the lost points.

Due to the relatively large number of assignments in this class and the potential for re-submissions, this class has a tight grading schedule. As a result, late work will not be accepted, except with the instructor's prior permission.

Preparing a profile of a San Jose neighborhood and comparing and contrasting your profile with your classmates' will constitute the 1-unit engagement unit. For this 1-unit engagement unit, the instructor will spend an additional 15 hours per semester on activities such as: designing the engagement unit activities and the related assignments, coordinating with community partners to implement the activities, advising students outside of class weekly as needed, and grading the engagement unit activity assignments.

Assignments	Share of Course Grade	Course Learning Objectives Covered
Exercises		
1) Exercise 1: Social research	10%	1
2) Exercise 2: Survey, experiments, field research	10%	3 & 4
3) Exercise 3: Inferential Statistics, Part 1	10%	2, 5 & 6
4) Exercise 4: Inferential Statistics, Part 2	10%	2, 5 & 6
5) Exercise 5: Logistic Regression	10%	2, 5 & 6
6) Exercise 6: Ordinary Least Squares Regression	25%	2, 5 & 6
Engagement Unit: Quantitative Analysis of a San Jose Neighborhood		
Memo A: Engagement Unit, Part 1	15%	2
Memo B: Engagement Unit, Part 2	10%	2

Final Examination or Evaluation

Submission of "Revised Exercise 6" and "Course Reflection" constitutes the culminating activities for this course.

Grading Information

Grades for the course will be assigned based on your percentage of total points earned on all assignments according to the following distribution:

A plus = 100 to 97

A = 96 to 93 points

A minus = 92 to 90 points

B plus = 89 to 87 points

B = 86 to 84 points

B minus = 83 to 81 points

C plus = 80 to 78 points

C = 77 to 73 points

C minus = 72 to 70 points

D plus = 69 to 67 points

D = 66 to 63 points

D minus = 62 to 60 points

F = 59 points or lower

University Policies

Per [University Policy S16-9](#), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information](#)

[web page](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (https://www.sjsu.edu/curriculum/courses/syllabus-info.php). Make sure to visit this page to review and be aware of these university policies and resources.

Plagiarism and Citing Sources Properly

Plagiarism is the use of someone else's language, images, data, or ideas without proper attribution. It is a very serious offense both in the university and in your professional work. In essence, plagiarism is both theft and lying: you have stolen someone else's ideas, and then lied by implying that they are your own.

Plagiarism will lead to grade penalties and a record filed with the Office of Student Conduct and Ethical Development. In severe cases, students may also fail the course or even be expelled from the university.

If you are unsure what constitutes plagiarism, it is your responsibility to make sure you clarify the issues before you hand in draft or final work.

Learning when to cite a source and when not to is an art, not a science. However, here are some common examples of plagiarism that you should be careful to avoid:

- Using a sentence (or even a part of a sentence) that someone else wrote without identifying the language as a quote by putting the text in quote marks and referencing the source.
- Paraphrasing somebody else's theory or idea without referencing the source.
- Using a picture or table from a webpage or book without reference the source.
- Using data some other person or organization has collected without referencing the source.

The University of Indiana has developed a very helpful website with concrete examples about proper paraphrasing and quotation. See in particular the following page: <https://plagiarism.iu.edu/overview/index.html>

If you still have questions, feel free to talk to the instructor. There is nothing wrong with asking for help, whereas even unintentional plagiarism is a serious offense.

Citation style

It is important to cite any references you use in your assignments correctly. The Department of Urban and Regional Planning uses Kate Turabian's *A Manual for Writers of Research Papers, Theses, and Dissertations*, Ninth Edition (University of Chicago Press, 2016, ISBN 978-0226430577). Copies of older editions might be available in the SJSU King Library, which you can use. Additionally, the book is relatively inexpensive, and you may wish to purchase a copy. Please note that Turabian's book describes two systems for referencing materials: (1) "notes" (footnotes or endnotes), plus a corresponding bibliography, and (2) in-text parenthetical references, plus a corresponding reference list. The instructor prefers the latter.

URBP 204: Quantitative Methods

Spring 2022

Course Schedule

(Subject to change with fair notice. Instructor will notify students of the changes in the class and by uploading a revised syllabus on the course webpage)

Please note: In the Course Schedule below, the chapter numbers for the Earl Babbie book are as per the 13th Edition. The Chapters numbers for the 13th and the 10th editions are provided at the end of the syllabus. If you buy a different edition, look for the corresponding chapter titles. Chapter numbers for the Salkind book are as per the 6th Edition. The Chapters numbers for the 6th and the 2nd editions are provided at the end of the syllabus. If you buy a different edition, look for the corresponding chapter titles. Chapter numbers for the Agresti and Finlay book are as per the 4th Edition. The Chapters numbers for the 4th and the 3rd editions are provided at the end of the syllabus. If you buy a different edition, look for the corresponding chapter titles.

Course Schedule

Week 1 (January 31) Course modality: on-line

Course Overview; Social Research

Required reading: Babbie, Ch. 2, 3 and 5

Week 2 (February 7) Course modality: on-line

Social Research continued; Census Overview

Exercise 1 Introduced

Week 3 (February 14) Course modality: on-line

Descriptive Statistics; Normal Distribution; Hypothesis Testing; T-statistics

Required reading: Salkind Ch. 2, 3, 7, 8 and 9

Week 4 (February 21) Course modality: on-line

Normal Distribution; Hypothesis Testing; T-statistics continued; Survey Research

Required reading: Babbie Ch. 9

Exercise 1 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Ex 1” and file name: “first name, last name, 204: Ex 1”)

Week 5 (February 28) Course modality: on-line

Survey Research (continued);

Activities for Engagement Unit (neighborhood profile and survey data)

Exercise 1 Graded

Neighborhood Profile Memo “A” and “B” Introduced

Week 6 (March 7) Course modality: on-line

Experiments and Qualitative Field Research

Required reading: Babbie Ch. 8 and 10

Revised Exercise 1 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Rev Ex 1” and file name “first name, last name, 204: Rev Ex 1”)

Exercise 2 Introduced

Week 7 (March 14) Course modality: in-person

Tests between Means of Different Groups; Tests Between Means of Related Groups; ANOVA

Required reading: Salkind, Ch. 11, 12 and 13

Memo A Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Memo A” and file name “first name, last name, 204: Memo A”); instructor will distribute your Memo A to classmates for preparing Memo B)

Revised Exercise 1 Graded

Week 8 (March 21) Course modality: in-person

Tests between Means of Different Groups; Tests Between Means of Related Groups; ANOVA (continued);

Factorial ANOVA; Chi-squared tests; Correlation

Required reading: Salkind, Ch. 14, 15 and 17

Research Questions Discussion

Exercise 3 Introduced

Memo “A” Graded

Exercise 2 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Ex 2” and file name “first name, last name, 204: Ex 2”)

Week 9 (March 28) — no class, Spring Break!!!

Week 10 (April 4) Course modality: in-person

Factorial ANOVA; Chi-squared tests; Correlation (continued);

Logistic Regression

Recommended Reading: Agresti and Finlay Ch. 15

Research Questions Discussion

Exercise 4 Introduced

Memo B Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Memo B” and file name “first name, last name, 204: Ex 2”)

Exercise 2 Graded

Exercise 3 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Ex 3” and file name “first name, last name, 204: Ex 3”)

Week 11 (April 11) Course modality: in-person

Logistic Regression (continued)

Exercise 5 Introduced

Revised Exercise 2 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Rev Ex 2” and file name “first name, last name, 204: Rev Ex 2”)

Exercise 3 Graded

Memo B Graded

Week 12 (April 18) Course modality: in-person

Ordinary Least Squares Regression (OLS); Lab-time for Exercise 5

Recommended Reading: Agresti and Finlay Ch. 9, 10, 11 and 14

Revised Exercise 2 Graded

Exercise 4 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Ex 4” and file name “first name, last name, 204: Ex 4”)

Revised Exercise 3 due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Rev Ex 3” and file name “first name, last name, 204: Rev Ex 3”)

Week 13 (April 25) Course modality: in-person
OLS (continued)

Exercise 4 Graded

Revised Exercise 3 Graded

Exercise 5 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Ex 5” and file name “first name, last name, 204: Ex 5”)

Week 14 (May 2) Course modality: in-person
OLS (continued)

Exercise 6 Introduced

Exercise 5 Graded

Revised Exercise 4 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Rev Ex 4” and file name “first name, last name, 204: Rev Ex 4”)

Week 15 (May 9) Course modality: in-person
Research Design; Lab-time for Exercise 6
Required Reading: Babbie, Ch. 4 and 6

Revised Exercise 4 Graded

Revised Exercise 5 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Rev Ex 5” and file name “first name, last name, 204: Rev Ex 5”)

Exercise 6 Due May 13 (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Ex 6” and file name “first name, last name, 204: Ex 6”)

Week 16 (May 16) Course modality: in-person (Potential to go on-line if no students feel the need for an in-person lab session. We will decide at the end of May 9 class)
Lab-time for Exercise 6

Revised Exercise 5 Graded

Exercise 6 Graded

Week 17 (May 23): Final Exam Week Course modality: on-line
Please note that since this is final exam week, the class meets from 5:15 pm to 7:30 pm
Course Reflection

Revised Exercise 6 Due (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Rev Ex 6” and file name “first name, last name, 204: Rev Ex 6”)

Appendix

Chapter Titles: Babbie 13th edition

- Ch. 1: Human Inquiry and Science
- Ch 2: Paradigms, Theory and Social Research
- Ch 3: The Ethics and Politics of Social Research
- Ch 4: Research Design
- Ch 5: Conceptualization, Operationalization, and Measurement
- Ch 6: Indexes, Scales, and Typologies
- Ch 7: The Logic of Sampling
- Ch 8: Experiments
- Ch 9: Survey Research
- Ch 10: Qualitative Field Research
- Ch 11: Unobtrusive Research
- Ch 12: Evaluation Research
- Ch 13: Qualitative Data Analysis
- Ch 14: Quantitative Data Analysis
- Ch 15: The Logic of Multivariate Analysis
- Ch 16: Statistical Analyses
- Ch 17: Reading and Writing Social Research

Chapter Titles: Babbie 10th edition

- Ch.1: Human Inquiry and Science
- Ch 2: Paradigms, Theory and Social Research
- Ch 3: The Ethics and Politics of Social Research
- Ch 4: Research Design
- Ch 5: Conceptualization, Operationalization, and Measurement
- Ch 6: Indexes, Scales, and Typologies
- Ch 7: The Logic of Sampling
- Ch 8: Experiments
- Ch 9: Survey Research
- Ch 10: Qualitative Field Research
- Ch 11: Unobtrusive Research
- Ch 12: Evaluation Research
- Ch 13: Qualitative Data Analysis
- Ch 14: Quantitative Data Analysis
- Ch 15: The Elaboration Model
- Ch 16: Social Statistics
- Ch 17: Reading and Writing Social Research

Chapter Titles: Salkind 6th edition

- Ch 1. Statistics or Sadistics? It's Up to You
- Ch 2. Means to an End: Computing and Understanding Averages
- Ch 3. Vive la Diff,rence: Understanding Variability
- Ch 4. A Picture Really Is Worth a Thousand Words
- Ch 5. Ice Cream and Crime: Computing Correlation Coefficients
- Ch 6. Just the Truth: An Introduction Understanding Reliability and Validity
- Ch 7. Hypotheticals and You: Testing Your Questions
- Ch 8. Are Your Curves Normal? Probability and Why It Counts
- Ch 9. Significantly Significant: What It Means for You and Me
- Ch 10. Only the Lonely: The One-Sample Z Test
- Ch 11. t(ea) for Two: Tests Between the Means of Different Groups
- Ch 12. t(ea) for Two (Again): Tests Between the Means of Related Groups
- Ch 13. Two Groups Too Many? Try Analysis of Variance

- Ch 14. Two Too Many Factors: Factorial Analysis of Variance—A Brief Introduction
- Ch 15. Cousins or Just Good Friends? Testing Relationships Using the Correlation Coefficient
- Ch 16. Predicting Who'll Win the Super Bowl: Using Linear Regression
- Ch 17. What to Do When You're Not Normal: Chi-Square and Some Other Nonparametric Tests
- Ch 18. Some Other (Important) Statistical Procedures You Should Know About
- Ch 19. Data Mining: An Introduction to Getting the Most Out of Your BIG Data
- Ch. 20. A Statistical Software Sampler
- Ch 21. The Ten (or More) Best (and Most Fun) Internet Sites for Statistics Stuff
- Ch 22. The Ten Commandments of Data Collection

Chapter Titles: Salkind 2nd edition

- Ch 1. Statistics or Sadistics? It's Up to You Part II
- Ch 2. Means to an End: Computing and Understanding Averages
- Ch 3. Vive la Diff,rence: Understanding Variability
- Ch 4. A Picture Really Is Worth a Thousand Words
- Ch 5. Ice Cream and Crime: Computing Correlation Coefficients Part III
- Ch 6. Hypotheticals and You: Testing Your Questions
- Ch 7. Are Your Curves Normal? Probability and Why It Counts Part IV
- Ch 8. Significantly Significant: What It Means for You and Me
- Ch 9. t(ea) for Two: Tests Between the Means of Different Groups
- Ch 10. t(ea) for Two (Again): Tests Between the Means of Related Groups
- Ch 11. Two Groups Too Many? Try Analysis of Variance
- Ch 12. Two Too Many Factors: Factorial Analysis of Variance
- Ch 13. Cousins or Just Good Friends? Testing Relationships Using the Correlation Coefficient
- Ch 14. Predicting Who'll Win the Super Bowl: Using Linear Regression
- Ch 15. What to Do When You're Not Normal: Chi-Square and Some Other Nonparametric Tests
- Ch 16. Just the Truth: An Introduction Understanding Reliability and Validity
- Ch 17. Some Other (Important) Statistical Procedures You Should Know About
- Ch 18. A Statistical Software Sampler Part V
- Ch 19. The Ten Best Internet Sites for Statistics Stuff
- Ch 20. The Ten Commandments of Data Collection

Chapter Titles: Agresti and Finlay 4th edition

- Ch 1. Introduction
- Ch 2. Sampling and Measurement
- Ch 3. Descriptive statistics
- Ch 4. Probability Distributions
- Ch 5. Statistical inference: estimation
- Ch 6. Statistical Inference: Significance Tests
- Ch 7. Comparison of Two Groups
- Ch 8. Analyzing Association between Categorical Variables
- Ch 9. Linear Regression and Correlation
- Ch 10. Introduction to multivariate Relationships
- Ch 11. Multiple Regression and Correlation
- Ch 12. Comparing groups: Analysis of Variance (ANOVA) methods
- Ch 13. Combining regression and ANOVA: Quantitative and Categorical Predictors
- Ch 14. Model Building with Multiple Regression
- Ch 15. Logistic Regression: Modeling Categorical Responses
- Ch 16. Introduction to Advanced Topics

Chapter Titles: Agresti and Finlay 3rd edition

- Ch 1. Introduction
- Ch 2. Sampling and Measurement
- Ch 3. Descriptive statistics
- Ch 4. Probability Distributions
- Ch 5. Statistical inference: estimation
- Ch 6. Statistical Inference: Significance Tests
- Ch 7. Comparison of Two Groups

- Ch 8. Analyzing Association between Categorical Variables
- Ch 9. Linear Regression and Correlation
- Ch 10. Introduction to multivariate Relationships
- Ch 11. Multiple Regression and Correlation
- Ch 12. Comparing groups: Analysis of Variance methods
- Ch 13. Combining regression and ANOVA: Analysis of Covariance
- Ch 14. Model Building with Multiple Regression
- Ch 15. Logistic Regression: Modeling Categorical Responses
- Ch 16. Introduction to Advanced Topics