

San José State University
Urban and Regional Planning Department
URBP 204, Quantitative Methods, Section 1, Fall 2021

Course and Contact Information

Instructor: Dr. Shishir Mathur
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Office Hours: By appointment (office hours over zoom and/or phone)
Class Days/Time: Monday, 4 pm to 6:45 pm
Classroom: WSQ 208
Course Website: <https://sjsu.instructure.com/courses/1430258>

Course Description

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

Course Format

This course will be taught in hybrid format (a mix of in-person classes and online instruction).

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on [Canvas Learning Management System course login website](#). Course-related communication and updates will be provided through email. The instructor will send email at the address associated with your MySJSU. So, please regularly check that email account. For help with using Canvas see [Canvas Student Resources page](#).

Course Learning Outcomes (CLO)

This course partially covers the following PAB Knowledge Components:

- 1e) The Future: understanding of the 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.

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.

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 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 on a weekly basis 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” will constitute 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 96

A = 95 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>). Make sure to visit this page to review and be aware of these university policies and resources.

URBP 204/Quantitative Methods, Fall 2021, 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 (August 23)

Course Overview; Social Research

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

Week 2 (August 30)

Social Research continued; Census Overview

Exercise 1 Introduced

Week 3 (September 6)—Labor Day—NO CLASS!

Week 4 (September 13)

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

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

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

Week 5 (September 20)

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

Required reading: Babbie Ch. 9

Exercise 1 Graded

Week 6 (September 27)

Survey Research (continued);

Activities for Engagement Unit Activities (neighborhood profile and survey data)

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

Neighborhood Profile Memo “A” and “B” Introduced

Week 7 (October 4)

Experiments and Qualitative Field Research

Required reading: Babbie Ch. 8 and 10

Exercise 2 Introduced

Revised Exercise 1 Graded

Week 8 (October 11)

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”; instructor will distribute your Memo A to classmates for preparing Memo B)

Week 9 (October 18)

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

Neighborhood Profile Memo “A” Graded

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

Week 10 (October 25)

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

Logistic Regression

Recommended Reading: Agresti and Finlay Ch. 15

Research Questions Discussion

Exercise 4 Introduced

Exercise 2 Graded

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

Week 11 (November 1)

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”)

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

Week 12 (November 8)

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 3 Graded

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

Week 13 (November 15)

OLS (continued)

Exercise 4 Graded

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

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

Week 14 (November 22)

OLS (continued)

Exercise 6 Introduced

Revised Exercise 3 Graded

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”)

Week 15 (November 29)

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”)

Exercise 6 Due December 3 (email at shishir.mathur@sjsu.edu with the subject line: “first name, last name, 204: Ex 6”)

Week 16 (December 6)

Lab-time for Exercise 6

Revised Exercise 5 Graded

Exercise 6 Graded

Week 17 (December 8): Final Exams Week

Please note that since this is Final Exam Week, the class meets on **Wednesday, December 8** from 2:45 pm to 5 pm

Course Reflection; Questions on Revised Exercise 6

Revised Exercise 6 Due December 13 (email at shishir.mathur@sjsu.edu with the subject line: “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