

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

**Course and Contact Information**

|                        |  |
|------------------------|--|
| Instructor(s):         | Dr. Shishir Mathur   |
| Office Location:       | Online   |
| Telephone:             | (408) (310-7856)   |
| Email:                 | <a href="mailto:shishir.mathur@sjsu.edu">shishir.mathur@sjsu.edu</a>   |
| Office Hours:          | Friday 4 pm to 6 pm and by appointment (email 2-3 days in advance to schedule a time and to request a zoom link) |
| Class Days/Time:       | Monday 4:30 pm to 7:15 pm  |
| Classroom:             | WSQ 113  |
| Course CANVAS website: | <a href="https://sjsu.instructure.com/courses/1490197">https://sjsu.instructure.com/courses/1490197</a>          |

**Course Description**

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

**Course Format**

In person course.

**Course Web Page and MYSJSU Messaging**

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

<https://sjsu.instructure.com/courses/1490197>

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, 13<sup>th</sup> Edition*. Belmont: Wadsworth. (ISBN: 9781133049791)

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

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

You may also buy/rent the 2<sup>nd</sup>, 4<sup>th</sup>, or 5<sup>th</sup> edition of the book. For some reason the 3<sup>rd</sup> 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, 4<sup>th</sup> edition*. New Jersey: Prentice Hall. (ISBN: 9780130272959). A paperback edition would cost approximately \$60. You may also use the 3<sup>rd</sup> 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](mailto: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 |
|--|-----------------------|------------------------------------|
| <b>Exercises</b>   |                       |                                    |
| 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                           |
| <b>Engagement Unit: Quantitative Analysis of a San Jose Neighborhood</b> |                       |                                    |
| 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>). 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

## Fall 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 13<sup>th</sup> Edition. The Chapters numbers for the 13<sup>th</sup> and the 10<sup>th</sup> 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 6<sup>th</sup> Edition. The Chapters numbers for the 6<sup>th</sup> and the 2<sup>nd</sup> 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 4<sup>th</sup> Edition. The Chapters numbers for the 4<sup>th</sup> and the 3<sup>rd</sup> 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 22)**

*Course Overview; Social Research*

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

##### **Week 2 (August 29)**

*Social Research continued; Census Overview*

*Exercise 1 Introduced*

##### **Week 3 (September 5) Labor Day—NO CLASS!**

##### **Week 4 (September 12)**

*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” and file name: “first name, last name, 204: Ex 1”)

##### **Week 5 (September 19)**

*Normal Distribution; Hypothesis Testing; T-statistics (continued); Survey Research*

Required reading: Babbie Ch. 9

*Exercise 1 Graded*

##### **Week 6 (September 26)**

*Survey Research (continued);*

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

*Neighborhood Profile Memo “A” and “B” Introduced*

*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”)

##### **Week 7 (October 3)**

*Experiments and Qualitative Field Research*

Required reading: Babbie Ch. 8 and 10

*Exercise 2 Introduced*  
*Revised Exercise 1 Graded*

**Week 8 (October 10)**

*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)

**Week 9 (October 17)**

*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 10 (October 24)**

*Factorial ANOVA; Chi-squared tests; Correlation (continued); Logistic Regression*

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

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” and file name “first name, last name, 204: Memo B”);

**Week 11 (October 31)**

*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 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”)

*Memo B Graded*

**Week 12 (November 7)**

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

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

*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”)

*Exercise 3 Graded*  
*Revised Exercise 2 Graded*

**Week 13 (November 14)**  
*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” and file name “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” and file name “first name, last name, 204: Ex 5”)

**Week 14 (November 21)**  
*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” and file name “first name, last name, 204: Rev Ex 4”)

**Week 15 (November 28)**  
*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 December 2*** (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 (December 5)**  
*Lab-time for Exercise 6*

*Revised Exercise 5 Graded*  
*Exercise 6 Graded*

**Week 17 (December 14) Final Exams Week**  
Please note that since this is final exam week, the **class meets from 2:45 pm to 5 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 13<sup>th</sup> 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 10<sup>th</sup> 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 6<sup>th</sup> 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 2<sup>nd</sup> 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 4<sup>th</sup> 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 3<sup>rd</sup> 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