

**SAN JOSÉ STATE UNIVERSITY**  
**DEPARTMENT OF URBAN AND REGIONAL PLANNING**  
**URBP 204: Quantitative Methods**  
**SPRING 2020**

Instructor(s):	Dr. Shishir Mathur
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Office Hours:	By appointment
Class Days/Time:	Monday 4:30 pm to 7 pm
Classroom:	WSQ 208

### **Course Catalog Description**

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

### **Course Web Page**

Course materials such as syllabus, lecturer notes, assignment instructions, etc. are at:  
<https://sjsu.instructure.com/courses/1359998>

### **Course Description**

This course is designed to familiarize students with research design and collection and statistical analysis of data for planning and public policy purposes. We will begin with an overview of social science research and then provide opportunity for students to define and conceptualize planning-related research questions and to execute statistical tools that students can use to make inferences from quantitative and qualitative data.

### **Course Learning Outcomes (CLOs)**

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 question. 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

### Textbook

There are two required textbooks for this course.

a) Babbie, Earl R. 2012. *Practice of Social Research, 13<sup>th</sup> ed.* Belmont: Wadsworth. (ISBN: 9781133049791). A used paperback edition would cost approximately \$30. You may also use the 10<sup>th</sup> edition of the book.

b) Salkind, Neil. 2010. *Statistics for People Who (Think They) Hate Statistics, 4<sup>th</sup> Edition.* Thousand Oaks: Sage. (ISBN: 9781412979597). A new paperback edition would cost approximately \$50.

You may also use the 2<sup>nd</sup> edition of the book. A used book would cost approximately \$20. You do not need to buy the book that comes with SPSS CD.

### Other 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.

## 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, a term project and its presentation, and two engagement unit activities. You will be able to revise and re-submit the take home six exercises and several term project-related assignments and earn up to 75% of the lost points.

<b>Assignments</b>	<b>Percent of Course Grade</b>	<b>Course Learning Objectives Covered</b>
Exercise 1	5%	1
Exercises 2 & 3	5% each	2
Exercise 4 & 5	10% each	2
Exercise 6	5%	1, 3 & 4
<b><i>Engagement Unit: Profile of a San Jose Neighborhood</i></b>		
Engagement Unit Part 1	15%	2
Engagement Unit Part 2	10%	2
<b><i>Term Project</i></b>		2, 3, 5 & 6
Term Project	30%	2, 3, 5 & 6
Term Project Presentation	5%	2, 3, 5 & 6

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.

### Final Examination or Evaluation

"In class presentation of Term Project" constitutes the culmination activity for this course. It will take place on the final examination day for this class, which is Monday, May 18, from 5:15 pm to 7:30 pm.

## 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](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), 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](http://www.sjsu.edu/gup/syllabusinfo) (<http://www.sjsu.edu/gup/syllabusinfo>), which is hosted by the Office of Undergraduate Education. Make sure to visit this page to review and be aware of these university policies and resources.

## URBP 204: QUANTITATIVE METHODS Spring 2020 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 4<sup>th</sup> Edition. The Chapters numbers for the 4<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 (January 27)**

*Course Overview; Social Research*

Required reading:

Earl, Babbie. Ch. 2, 3 and 5

### **Week 2 (February 3)**

*Social Research; Census Overview; Descriptive Statistics*

Required reading: Salkind, Neil. Ch. 2, 3 and 4

*Exercise 1 Introduced*

### **Week 3 (February 10)**

*Normal Distribution; Hypothesis Testing; T-statistics*

Required reading: Salkind, Neil. Ch. 7, 8 and 9

### **Week 4 (February 17)**

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

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

*Exercise 1 Due*

### **Week 5 (February 24)**

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

*Factorial ANOVA; Chi-squared tests; Correlation*

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

*Exercise 2 Introduced*

*Neighborhood Profile Memo "A" and "B" Introduced*

*Exercise 1 Graded*

### **Week 6 (March 2)**

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

*Term Project Introduced (Review of Memo A and B; Review of Survey Questionnaire; Review of Survey Data File)*

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

*Exercise 3 Introduced*

*Revised Exercise 1 Due*

### **Week 7 (March 9)**

*Ordinary Least Squares Regression (OLS)*

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

*Revised Exercise 1 Graded*

*Exercise 2 Due*

**Week 8 (March 16)**

*Ordinary Least Squares Regression (OLS) continued*

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

*Neighborhood Profile Memo "A" Due (also email to the instructor for distribution to classmates for preparing Memo B)*

*Exercise 4 Introduced*

*Exercise 3 Due*

*Exercise 2 Graded*

**Week 9 (March 23)**

*Logistic Regression; Review of other Term Project assignments; Discussion of Research Questions Assignment; Lab Time for Exercise 4*

Recommended Reading: Agresti and Finlay Ch. 15

*Research Questions Assignment Introduced*

*Exercise 3 Graded*

*Neighborhood Profile Memo "A" Graded*

*Revised Exercise 2 Due*

**Week 10 (March 30) — no class, Spring Break!!!****Week 11 (April 6)**

*Logistic Regression*

Recommended Reading: Agresti and Finlay Ch. 15

*Exercise 5 Introduced*

*Exercise 4 Due*

*Neighborhood Profile Memo "B" Due*

*Research Questions Assignment Due*

*Revised Exercise 3 Due*

*Revised Exercise 2 Graded*

**Week 12 (April 13)**

*Survey Research; Lab time for Exercise 5*

Required reading: Earl, Babbie Ch. 9

*Revised Exercise 3 Graded*

*Exercise 4 Graded*

*Neighborhood Profile Memo "B" Graded*

*Research Questions Assignment Graded*

### **Week 13 (April 20)**

*Survey Research*

Required reading: Earl, Babbie Ch. 9

*Exercise 5 Due*

*Revised Exercise 4 Due*

*Revised Research Questions Assignment Due*

### **Week 14 (April 27)**

*Experiments and Qualitative Field Research; Lab Time for Term Project Analysis Report*

Required reading: Earl, Babbie Ch. 8 and 10

*Exercise 6 Introduced*

*Revised Exercise 4 Graded*

*Revised Research Questions Assignment Graded*

*Exercise 5 Graded*

### **Week 15 (May 4)**

*Experiments and Qualitative Field Research*

Required reading: Earl, Babbie Ch. 8 and 10

*Revised Exercise 5 Due*

*Term Project Analysis Report Due*

### **Week 16 (May 11)**

*Research Design; Lab Time for Presentation and for Revised Term Project Analysis Report*

Required reading: Earl, Babbie Ch. 4 and 6

*Term Project Analysis Report Graded*

*Exercise 6 Due (email at shishir.mathur@sjsu.edu with the following subject line: URBP 204 First Name, Last Name Exercise 6; hard copy not required); Note: The graded Exercise 6 will be returned via email by May 13*

**Class 17 (May 18)**—Final's exam week. Class meets from 5:15 pm to 7:30 pm

*In-Class Presentation of Term Project (presentation guidelines will be handed out a few weeks before)*

*Revised Term Project Analysis Report Due*

*Revised Exercise 6 Due*

## **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 pages:

- Overview of plagiarism at [www.indiana.edu/~istd/overview.html](http://www.indiana.edu/~istd/overview.html)
- Examples of plagiarism at [www.indiana.edu/~istd/examples.html](http://www.indiana.edu/~istd/examples.html)
- Plagiarism quiz at [www.indiana.edu/~istd/test.html](http://www.indiana.edu/~istd/test.html)

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

### **Citation style**

It is important to properly cite any references you use in your assignments. 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.

## **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 4th 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  
Ch 6. Just the Truth: An Introduction Understanding Reliability and Validity Part III Ch 7.  
Hypotheticals and You: Testing Your Questions  
Ch 8. Are Your Curves Normal? Probability and Why It Counts Part IV 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  
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. A Statistical Software Sampler Part V  
Ch 20. The Ten (or More) Best Internet Sites for Statistics Stuff  
Ch 21. 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