

**Course and Contact Information**

Instructor	Dr. Sanchita Mukherjee
Office Location	DMH 214
Email	<a href="mailto:sanchita.mukherjee@sjsu.edu">sanchita.mukherjee@sjsu.edu</a>
Office Hours	Tuesdays 10:30am-11:30am (PST) via Zoom and/or by appointment Office Hour Zoom Link: <a href="https://sjsu.zoom.us/j/89992477398">https://sjsu.zoom.us/j/89992477398</a>
Class Days/Time	MoWe 9:00AM- 10:15AM Online from Jan 26-Feb 11 Zoom Live Lecture Link: <a href="https://sjsu.zoom.us/j/84429454295">https://sjsu.zoom.us/j/84429454295</a>
Classroom	Feb 14 - May 16: Dudley Moorhead Hall (DMH) 348
Prerequisites	ECON 101 and introductory statistics (SOC1 15, STAT 95, UNVS 15S or equivalent)

**Course Description (Required)**

This course is an introduction to applying statistical techniques to economic issues. The course will cover practical methods for organizing and analyzing economic data, testing economic hypotheses, and measuring economic relationships. Regression analysis is the main empirical method. Topics we will cover include basic statistical and probability theory, simple and multiple regression models, dummy variables, multicollinearity and heteroskedasticity.

**Course and Program Learning Objectives (CLOs and PLOs)**

This course reinforces PLO1: **research methods** and PLO5: **communication**, and introduces PLO4: **areas: quantitative methods**. Specific CLOs for this course include:

CLO 1.) Explain basic methods in econometrics and identify correct procedures

- a) Explain the difference between variables and a statistic in the context of a regression equation.
- b) Define the terms "causal effect" and "ideal experiment". Explain the difference between descriptive statistics, inferential statistics, and causal inference.
- c) Give an example of a regression coefficient estimate that suffers from omitted variable bias, and explain how the regression control technique could reduce bias in the example.
- d) Describe all the numbers in a regression results table in an economics book or journal article; write the regression equation, identifying the independent and dependent variables; identify the main independent variable of interest; interpret the model, including polynomial and log models; test their statistical significance; evaluate them in terms of any potential bias.
- e) Discuss best practices in estimating standard errors.

CLO 2: Use technology to analyze data

- a) Create summary statistics for variables in a data set using the R software program.
- b) Estimate a regression model (coefficients and standard errors) and create a scatterplot with a regression line in R.
- c) Download data from the Internet and read it into a statistical software package

- d) Run an R script associated with a published research study by modifying the directory path, installing required packages, loading data, and obtaining results.
- e) Create a new script by modifying an existing script, and use your original results in a term paper

CLO 3: Prepare a scholarly research paper describing an original regression analysis:

- a) Formulate an interesting and important research question.
- b) Locate and describe data from Internet or other sources.
- c) Search and analyze scholarly literature related to research question.
- d)



97-100 A+ 87.0	93.0-96.9 A	90.0-92.9 A-
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<b>Week</b>	<b>Date</b>	<b>Topics, Readings, Assignments, Deadlines</b>
14	4/25	Chapter 7: Specifying Models
14	4/27	Chapter 7: Specifying Models
15	5/2	Chapter 10: Experiments: Dealing with Real World Challenges
15	5/4	Chapter 10: Experiments: Dealing with Real World Challenges <b>Problem Set 4 Due (On Canvas by Fri, 5/6)</b>
16	5/9	Chapter 10: Experiments: Dealing with Real World Challenges
16	5/11	Chapter 10: Experiments: Dealing with Real World Challenges