San José State University
Social Sciences/Economics
ECON 103, Introduction to Econometrics, Section 1, Fall, 2017

Course and Contact Information

Instructor:	Dr. Rui Liu
Office Location:	GMH 143
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Office Hours:	T Th 2pm to 3pm, and by appointment
Class Days/Time:	T Th 10:30am to 11:45pm
Classroom:	DMH 160
Prerequisites:	ECON 3

Course Format

Computing

You are encouraged to use R. R can be downloaded free from the R website

https://cran.cnr.berkeley.edu/

However, you may use any package you wish, such as EViews, Excel, SAS, Stata, GRETL. You may also use Mathematica or Matlab. Mathematica can be downloaded free from the eCampus website by any SJSU student.

A good introduction to statistical packages can be found from http://www.ats.ucla.edu/stat/

Let me emphasize that you will be on your own for support with any package except R. Also, you are strongly discouraged from relying exclusively on Excel.

Course Description

The aims of this course are to study basic econometric techniques. The emphasis will be upon the understanding and use of econometric methodology, and the written and oral communication of the results of data analysis. Topics we will cover include simple and multiple regression models, dummy variables, multicollinearity, heteroskedasticity, and topics on panel data and time series.

Course Learning Outcomes (CLO)

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

• *Learn basic econometric techniques and their applications to business and economics.*

• *Understand how to postulate and test hypotheses related to economic issues or problems.*

• *Develop the tools necessary to conduct empirical work in business and economics.*

• *Build experience in estimating economic models with econometric modeling software.*

• *Use programming language R to estimate regressions.*

• *Analyze the strengths and weaknesses of the basic regression model.*

• *communicate clearly and effectively in writing, and learn to relate econometric techniques to written arguments.*

• *Apply econometric techniques to economic theory and real-world problems.*

Required Texts/Readings

Textbook

Stock, J.H. & Watson, M.W. 2011. Introduction to Econometrics. Pearson 3rd ed.

Other Readings

Chritian Kleiber & Achim Zeileis, 2008, Applied Econometrics with R, Springer, 1st ed.

Course Requirements and Assignments

Bi-Weekly Homework:

There will be problem sets every other week, each of which involves empirical analysis. The data for the problem sets will be posted on Canvas. *Please hand in homework assignments before class on the day they are due. Assignments handed in after this, but before answers are distributed (typically two days later) will be marked down by 50%. Assignments handed in after answers are distributed will receive no credit.*

Students are encouraged to work with others in the class on their problem sets, but each student must write up his or her answers separately. ***The maximum group size is 3****. Please list the name(s) of those with whom you worked on your assignment.*

Term Paper/Project: 20%

The purpose of this project is to provide an opportunity to formulate an economic model, estimate the model with appropriate data, and interpret the results. This experience will help you understand how econometrics relates to other economics courses which focus on theoretical models for how the world operates. Econometrics

provides a method of testing the validity of these economic models. Additionally, the term paper will improve your writing skills and give you a chance to write clearly and concisely about technical material.

This project will involve replicating the analysis presented in an empirical paper, and possibly presenting further analyses of the data set used in the paper. As an alternative, you may use a data set of your own choosing and carry out an original analysis, using your own research. A major goal of this exercise is organization and presentation of a carefully written report. Prior to starting the project, you will submit a brief (not more than one page) project proposal for my review. ***This proposal is required****.*

Collaboration on term project is encouraged. ***The maximum group size is 2. The project results must be presented in a poster on Dec 1.***

The top three posters that receive most favorable votes will be awarded with extra credits, an opportunity to compete for department research scholarship and to present your work at a conference.

Paper structure

I. Title page.
II. Abstract. This should be less than 50 words and summarize the topic, methodology, and main findings. It should appear on your title page.
III. Introduction. This section should state the nature and objectives of the project along with a brief review of any relevant literature. Make sure to provide some background or motivation for why your project is interesting.
IV. Description of the model. The model should be clearly stated and any equations carefully explained. You should write out the econometric model you plan to estimate, and discuss the expected impact of the exogenous variables in your model.
V. Data description and model estimation. You should use the techniques developed in class to analyze your data and estimate your model. Make sure to describe the dataset you are using by providing summary statistics of important variables. Your results should be reported and discussed in this section and could include: parameter estimates, standard errors, t-statistics, F-statistics, R2 , tests for autocorrelation, heteroskedasticity, and possible multicollinearity, as appropriate.
VI. Conclusion. Review the major findings as well as possible extensions for future work. Make sure to mention any limitations of your approach as well as alternative explanations of your results. Policy implications, if any, could also be included in this section.
VII. Tables and graphs. Your paper must include at least one table and one graph. The tables and graphs should be well-labeled and accessible to the reader—do not merely print out your regression output with cryptic variable names.
Appendix If you have a lot of regression results or other details in your theoretical/statistical model that merit to be included yet, they may distract the reader, you may include them in an appendix.

Preliminary Assignments

There are three assignments leading up to the final draft of your paper.

Assignment #1: Due at the beginning of class on ***October 1, 2017****. Write up a one to two page memo which motivates why the topic you have chosen might be interesting. Find at least one article (from a newspaper, academic journal, or popular periodical) that may be used as support or motivation for your topic. Briefly refer to this article in your memo. Late assignments will not be accepted.*

Assignment #2: Due at the beginning of class on ***Nov 9, 2017.*** *Collect your data and create a table with summary statistics of the variables you plan to use in your project. In one to two pages, describe the variables*

you are using and highlight any interesting numbers from your table of summary statistics. Late assignments will not be accepted.

*Assignment #3: Due at the beginning of class on **November 28, 2017**. Turn in two copies of a rough draft. While your paper does not have to be complete, you should at least describe your model and have some preliminary results. Late assignments will not be accepted*

Online Lab:

The lab is designed to give you experience using computer software and managing data. In addition, hands on experience with the data will reinforce the statistical and econometric theory and methods and thus help to prepare you for taking the exams. Examples covered in the lab are similar to weekly homework assignments.

Exams: 50%

There are two midterm exams and one final comprehensive exam. Students are not allowed the use of any aids on the midterms, although they may use their notes during the final. All of these exams will be multiple choice exams. One-third of the questions will be similar to the Practice Quiz questions found here: http://wps.aw.com/aw_stock_ie_3. Another third of the exam questions will be multiple choice questions based on the bi-weekly homework assignments. The final third will be based on lecture notes.

Grading Information

There will be two midterm exams and a comprehensive final, ten homework assignments and a term paper/project.

Final grades will be determined as follows:

Assignment	%	Due Dates
Average of the homework assignments (lowest HW dropped)	30%	Every two weeks
Midterm 1	15%	9/29
Midterm 2	15%	11/3
Comprehensive Final	20%	12/18
Term Paper/Project	20%	12/1

Classroom Protocol

Attendance will not be taken. In consideration to your classmates and me, be on time, stay for the duration of the class and avoid any disruptive activities within the classroom (cell phones, side conversation, newspaper reading, etc.)

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

ECON 103 / Intro to Econometrics, Fall, Course Schedule

Course Schedule

Week	Topics, Readings, Assignments, Deadlines
1	Introduction
2	Review of basic probability and statistics concepts, chp 2, 3
2	Review of Basic Probability and Statistics Concepts, chp 2, 3,
3	Review of Basic Probability and Statistics Concepts, Chp 2, 3
3	Linear regression with one regressor, chp 4, HW 1 due
4	Linear regression with one regressor, chp 4
4	Inference, chp 5, HW 3 due
5	Inference, chp 5
5	Linear regression with multiple regressors, chp 6, HW 2 due
6	Linear regression with multiple regressors, chp 6
6	**Midterm 1**
7	Inference, chp 7
7	Inference, chp 7, HW 3 due
8	Nonlinear regressors, chp 8
8	Nonlinear regressors, chp 8
9	Model assessment, chp 9
9	Model assessment, chp 9, HW 4 due
10	Panel, chp 10
10	Panel, chp 10
11	Panel, chp 10, **proposal due**

Week	Topics, Readings, Assignments, Deadlines
11	**Midterm 2, HW 5 due**
12	Binary Dependent Variable, chp 11
12	Binary Dependent Variable, chp 11
13	IV, chp 12
13	IV, chp 12, HW 6 due
14	IV, chp 12
14	**No class, Thanksgiving**
15	Time series
15	**Poster presentation and term paper due**
16	Time series
16	Review, HW 7 due
Final exam	12/18, 9:45am