San José State University (1/24/2018)

Economics 103, *Introduction to Econometrics*, Section 1, SP 18

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Office Hours* / Location:	Wednesdays, 3:45 - 4:15p.m. & by appointment / DMH 131
Lecture Room/ Lab Room	Dudley Moorhead Hall 166 / Central Classroom Building 100)
Days / Times:	Monday (meets in lab room) and Wednesdays (in DMH) / 4:30-5:45p.m.
Prerequisites:	Econ 3 or equivalent

*Email is my preferred form of communication. Also, during final exam week, office hours are by appointment only.

Faculty Web Page, Canvas and Communication Issues

Canvas is the Learning Management System at SJSU. Please be sure you can log in and are receiving my announcements. Although I will be communicating with the class through Canvas, if you have an individual question for me, please email me directly. For info on accessing Canvas visit https://sjsu.instructure.com.

Course Description

This course is designed to give students marketable skills in core econometric analysis, while providing a survey of advanced topics in econometrics. Midterm and final exams focus intensely on a few core topics, including estimating simple and multiple regression models, conducting hypothesis tests, and use of nonlinear models, and the important caveats related to these methods most relevant for applied research.. Advanced topics, such as panel data methods, qualitative choice models, quasi-experiments, instrumental variables, and time series topics, will be addressed with limited detail in lectures. Students in this class will obtain data and conduct original econometric research. The class will meet in two rooms: DMH 166, a traditional classroom, and CCB 100, a computer lab. The location of each class will be announced on Canvas at least 24 hours before the start of class, but generally we will meet in ARC lab on Mondays and DMH on Wednesdays. All exams will be held in DMH 166. Please pay close attention to announcements as this format is subject to change.

Course and Program Learning Objectives (CLOs and PLOs)

This course emphasizes three PLOs: ***research methods*** (ECON PLO3), ***quantitative methods*** (PLO4d), and ***communication*** (PLO5). The five specific Course Learning Objectives for ECON 103 include:
CLO 1.) Explain core methods in econometrics and identify correct procedures. CLO 2.) Discuss advanced econometric topics at a conceptual level. CLO 3.) Access data and use computer software to estimate econometric models. CLO 4.) Interpret econometric models estimated with computer software. CLO 5.) locate data, format it to be read by regression software, and develop, estimate and interpret an original econometric model to shed light on a problem of social importance. CLOs 1, 2 & 4 will be assessed with exams, CLO 3 with weekly lab assignments, and CLO 5 by term paper.

Required Textbooks

Bailey, Michael A. 2017. *Real Econometrics: The right tools to answer important questions*. New York, NY Oxford University Press.

- This course will follow the book closely. Buy it and read it.

Sundstrom, William A. and Michael J. Kevane. *Guide to R: Data analysis for Economics.*

- This is available as a free PDF document at http://rpubs.com/wsundstrom/home

Required Computer Software

All students should have installed on their personal machines 1.) A spreadsheet program, and 2.) A statistical software package. I will provide support for MS Excel, Stata and R. As a student, you can purchase a six-month license for Stata IC for $45 (www.stata.com/order/new/edu/gradplans/student-pricing/). For R, we will use the R Studio interface; see the first chapter of the *Guide to R* by Sundstrom and Kevane for information on downloading these free software programs.

Assignments

Total points on all assignments sum to 100. Below you will find an explanation for each of these assignments.

Assignment	*Points*	***Due Dates***
Midterm and Final Exams	**60** (20 points each)	2/28, 4/2 and 5/22
Weekly Lab Assignments	**15** (1 point each)	Fridays @ 5:00p.m.
Term Paper	**25** (5 points for outline, 5 for draft, 5 for presentation & 10 for final paper)	Outline 3/1, Draft 5/11, Presentation 5/2, 5/7 or 5/9, Final Paper 5/16

Midterm and Final Exams

There will be two midterms and one final exam. The midterms will be multiple choice and the comprehensive final will be essay. For exams, about one-third of the questions will be based on *readings*, another third of the exam questions will be multiple choice questions based on the *lab assignments*, and the final third will be based on topics discussed in *lectures* and on which you should have taken notes. There are no bathroom breaks during exams so please plan accordingly.

Weekly Lab Assignments

The Lab Assignments are 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. Points on these Lab Assignments are easy to earn; if you make an honest attempt at them, and submit them before 5:00p.m. on Fridays, you will usually earn full points. Late assignments are accepted for partial credit on a case by case basis. Descriptions for weekly assignments are found on Canvas. Answers will be provided in class.

Term Paper

Students will write an original paper on a question of scholarly interest. After developing a research question, and formulating a hypothesis, the main tasks involved in carrying out an applied econometric study include: identifying and accessing cross-sectional or panel data (no time series), formatting the data for analysis, analyzing the data using appropriate statistical techniques, and producing tables that summarize the data and report the results of the analysis. The term paper will also survey econometric literature and describe economic theory that relates to the research question.

All students must read Stock and Watson's chapter titled, "Conducting a Regression Study Using Economic Data," at: http://wps.aw.com/wps/media/objects/11422/11696965/stoc2517.ch10.343-350.C1.pdf *Follow the instructions detailed in this Chapter*. By March 1, you will choose a topic, collect data, and write up an outline that contains your project's title, five sections with section names, a one sentence research question, detailed data references, and the regression equation you plan on estimating (making clear what is the unit of observation.) On either May 2nd, 7th or 9th you will make a short presentation, using presentation slides. The draft is due on 5/18 and the final paper is due on 5/23.

All papers must have five sections with the following section titles: Introduction, Literature Review and Economic Theory, Description of Data, Empirical Results, and Conclusion. Each section should be about five paragraphs in length and each paragraph about five sentences. Papers must have these three tables: Variable Descriptions, Summary Statistics, and Regression Results. Figures are encouraged. Tables must be formatted as described in class. All papers must also write out an equation describing the empirical model. Holian (2014) is a paper that closely follows this format.

As a set of minimal standards for regression models, all papers should report more than one model specification in Table 3 (the Regression Results table.) One of these specifications should contain at least three distinct variables (e.g a polynomial specification of one variable does not count as more than one), and one of the variables must be continuous. You should also estimate at least one nonlinear model, i.e. include polynomial, logarithmic, and/or interaction variables. In the Conclusion, all students must critically evaluate the models they present, and discuss ways to improve them in future work. Any attempts at using advanced techniques (panel methods, etc.) are eligible to earn extra credit. Finally, there is one additional requirement this semester. Students must use data from the American Community Survey (ACS).

Data can be either at the person or household-level (i.e. be microdata), or if aggregate data is used, students can choose the unit of analysis (e.g. city, county, PUMA, etc.) BUT it must contain data from at least two different time periods (i.e. it must be panel data).

Tips on finding and accessing published econometric research

Here are three options for locating published econometric research: 1.) search the JSTOR database. http://library.calstate.edu/sanjose/databases/alphabetical?alpha=J, limit your search to Econ journals in Advanced Search, and search using keywords in your area of interest; 2.) search the EconLit database (change end of link above from "J" to "E"). You can search by keyword; try also to search by subject (SU) and JEL code: https://www.aeaweb.org/econlit/jelCodes.php; 3.) Often there is one "seminal" article that most researchers who are studying similar topics to you cite. If this is true for the area you are studying (and even if it isn't) go to Google Scholar, search for a study, and click the " button. This is a convenient way of doing a cited reference search. (Note: When you find articles on Google or through other web search, you will often need to access the university's subscriptions. Our library subscribes to most scholarly journals.[1] Go to http://library.sjsu.edu/ and click Journal Titles. Enter the journal title. You can do this faster; on Google Scholar, set up "library links" under "settings".)

Rubrics for evaluating Outlines, Rough Drafts and Term Papers

Criteria	Description of Criteria for Outlines
Topic (1 point)	Is the research question specific and does it relate to an interesting causal question in a relevant economics literature?
Data (2 points)	Can the reader gain a clear picture of the data source and the measures contained in it? Can the reader easily access your data and identify the variables to be used? Does it contain a regression equation with an available dependent variable and at least one independent variable?
Organization (1 points)	Does it appear the student read and understood Chapter 10 of SW (Brief Edition?) Does it appear the student read and understood the requirements for the term paper described in the syllabus?
Difficulty (1 points)	Is appropriate data employed or is it a convenience source?

Criteria	Description of Criteria for Papers
Organization (up to 1.5 pts)	Is the Research Question clearly stated? Are there five sections? Are sections given correct titles? Does content of a section match its title? Is there a title and abstract? References?
Grammar (up to 1.5 pts)	Does each paragraph have a topic sentence? Do all sentences develop one controlling idea? Does paper use appropriate grammar (punctuation, syntax, usage)? Is the paper free of spelling errors? Are citations used appropriately?
Style (up to 1.5 pts)	Does paper avoid the passive voice? Does paper avoid use of the word "stated"? Does paper avoid split infinitives? Overall, is the writing style and voice appropriate? Does it appear the student read contemporary and seminal studies and is it written in the style of the profession? Does it appear the student read Langlois' notes on writing? http://web.uconn.edu/langlois/writing/style.html
Content I (up to 2.5 pts)	A specific causal research question must relate to a relevant economics literature and good data must be used to shed light on the question. The literature review must be integrated and not merely an annotated bibliography, and it must discuss ways the state-of-the art studies handle well-defined econometric problems (such as OVB and SCB).
Content II (up to 3 pts)	The student must obtain data, estimate econometric models and present the results in an easy to read format, and highlight strengths and limitations of the econometric model, and suggest directions for future research.

[1]Various metrics rank journals according to "impact factors" such as those at: https://ideas.repec.org/top/top.journals.simple.html

Course Schedule (*To be updated periodically; most recent version will be posted to* Canvas; note date at top of file.)

Date / Location	Topic	Readings assigned for next class
24-Jan / DMH	Intro to Econometrics and Statistical Computing	Bailey pp. xviii-xxvi, Sundstrom and Kevane pp. i-ii & 1-12
29-Jan / ARC	Using STATA, R and R Studio	Bailey Ch 1;
31-Jan / DMH	The Quest for Causality	Bailey Ch 2
5-Feb / ARC	Presenting Data in Tables and Figures	
7-Feb / DMH	Good Data Practices	ACS Codebook, Survey Instrument
12-Feb / ARC	American Community Survey data	Bailey (Ch 3)
14-Feb / DMH	Regression with Two Variables	
19-Feb / ARC	Estimating Models and Reporting Regression Results	Bailey (Ch 4)
21-Feb / DMH	Hypothesis Testing	
26-Feb / DMH	Exam Review (*note room change*)	
28-Feb / DMH	**MIDTERM 1** **OUTLINE**	Bailey Ch 5
5- Mar / ARC	Regression with More Than Two Variables	
7- Mar / DMH	Multiple Regression (continued)	Bailey Ch 6 and Section 12.1
12-Mar / ARC	Lab Exercises	
14-Mar / DMH	Interpreting Models with Dummy Variables	Bailey Ch 7
19-Mar / ARC	Lab Exercises	
21- Mar / DMH	Nonlinear Regression Models	
	SPRING BREAK (March 26 through March 30)	
2-Apr / DMH	**MIDTERM 2**	Bailey Ch 8
4-Apr / DMH	Panel Data	
9-Apr / ARC	DD Exercises	Bailey Ch 9
11-Apr / DMH	Instrumental Variables	
16-Apr / ARC	IV Exercises	Bailey Ch 10; reference to AB tests TBA
18-Apr / DMH	Experimental Methods	
23-Apr / ARC	AB Exercises	Bailey Ch 11
25-Apr / DMH	Regression Discontinuity	
30-Apr / ARC	RD Exercises	
2-May / DMH	Student Presentations	
7-May / DMH	Student Presentations	
9-May / DMH	Student Presentations **ROUGH DRAFT**	
14-May / DMH	Review for Final Exam	
16-May / DMH	**FINAL EXAM @** 12:15p.m. **FINAL PAPER**	Final exam covers Bailey Ch 1 – 11 and Section 12.1

Further reading / resources:

Angrist, J. D. and Pischke, J. 2014. *Mastering Metrics*, Princeton University Press, Princeton, N.J. (Download the Introduction and Chapter 1 at the following link: http://press.princeton.edu/titles/10363.html)

Stock, J.H. & Watson, M.W. 2011. Introduction to Econometrics. Pearson 3rd ed. (*or other editions*)

Economics Departmental Policies

Policy for Waiving the One Unit Statistics lab (Econ 180) **(Rev. Feb. 15, 2017)**

Economics 3 is a four-unit class in Introductory Statistics and Probability Theory, consisting of three units lecture and one unit computer lab. Majors may substitute a statistics class from another institution or another course on campus to cover the three units of the course but may not count this toward the computer lab. In place of the one unit computer lab component, students may take a one unit independent study (Econ 180) to complete the computer projects or can waive the requirement by taking Econ 103 (and earning at least a grade of C). Students taking Econ 103 will need to submit a substitution/waiver form to be signed by an advisor and the department chair. The requirement will not be waived until a grade in Econ 103 has been awarded.

(Please note: While this class can be waived as a requirement for fulfilling the major, there is no way to waive the total number of units (120) needed for graduation as required by the university.)

University Policies

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/. ***Instances of academic dishonesty will not be tolerated***. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Integrity Policy S07-2 requires approval of instructors.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic_calendars/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/**.** Students should be aware of the current deadlines and penalties for dropping classes. Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at http://www.sjsu.edu/aec to establish a record of their disability.