ECN 102 A01-A04: ANALYSIS OF ECONOMICS DATA
SYLLABUS
Department of Economics, University of California - Davis
FALL 2023

TEACHING WILL BE IN PERSON AND EXAMS WILL BE IN CLASS. RECORDINGS WILL NOT BE AVAILABLE.

The required text is *Analysis of Economics Data: An Introduction to Econometrics.*
You can obtain a **pdf version** of the text in the following way
- for $6.99 directly from Amazon for a "Kindle replica book" (this can be read on a computer after downloading Kindle Reader software from Amazon).
You can obtain a **paperback version** in one of two ways.
- free from the UCD bookstore if you chose to participate in UCD Equitable Access (cost $169 per quarter)
- for $25 plus shipping directly from Amazon

The statistical package used is Stata.
Stata is also available free in university computer labs.
More conveniently, a personal student license costs $48 (6 months), $94 (1 year); $225 (permanent copy).

Instructor:
Professor Colin Cameron
1124 Social Sciences and Humanities
email: accameron@ucdavis.edu
website: http://www.econ.ucdavis.edu/faculty/cameron/

Meeting:
Tues Thurs 10.30 - 11.50 a.m. Wellman 2

Instructor Office Hours:
Tuesday afternoon 3.30 - 5.00 pm in office SSH 1124 In person only
Wednesday afternoon 3.30 - 5.00 pm in office SSH 1124 In person only

Teaching Assistants:

Yuan Tao yuatao@ucdavis.edu
Office hours: Wednesday 10.00 - 11.00 am in SSH 0116 In person only
Wednesday 11.00 am - noon in SSH 0120 In person only

Jou-Chun Lin joulin@ucdavis.edu
Office hours: Thursday 1.00 - 3.00 pm in SSH 0116 In person only

Kyle Nabors kwnabors@ucdavis.edu
Office hours: Wednesday 4.00 - 6.00 pm in SSH 0116. In person only

Discussion Sections in Hutchison 93:

A01: Tuesday 1.10 - 2.00 pm 93 Hutchison TA: Kyle Nabors
A02: Tuesday 2.10 - 3.00 pm 93 Hutchison TA: Kyle Nabors
A03: Tuesday 3.10 - 4.00 pm 93 Hutchison TA: Jou LIn
A04: Tuesday 4.10 - 5.00 pm 93 Hutchison TA: Jou LIn
A05: Thursday 12.10 - 1.00 pm 93 Hutchison TA: Yuan Tao
A06: Thursday 1.10 - 2.00 pm 93 Hutchison TA: Yuan Tao

Course Goals:

(1) Review univariate statistics and then focus on regression analysis for the relationship between a single variable and one or several explanatory variables.
(2) Apply these methods to key economics data using the econometrics package Stata.
(3) Provide a bridge between introductory statistics and more advanced data analysis courses, e.g. between Statistics 13 and Economics 140. **Pre-requisites:**

Pre-requisites:
Economics 1A-B, Statistics 13, 13Y or 32 and Math 16A-B or 17A-B or 21A-B or consent of instructor.
The essential pre-requisites are exposure to introductory lower-division courses in economics and statistics.

Relationship to Economics 140
Economics 140 (Econometrics) is a more advanced course that also covers the methods of Economics 102.
Economics 140 has Economics 102 or Statistics 108 as a prerequisite.
For more on possible data classes see http://cameron.econ.ucdavis.edu/e102/morestat.html

Topical Outline by Lecture Number:

The required text is A. Colin Cameron, *Analysis of Economics Data: An Introduction to Econometrics.*

A. UNIVARIATE: Analysis of a single economics variable
Lecture 1: Introduction and getting going on Stata (chapter 1 + Stata http://cameron.econ.ucdavis.edu/stata/stata.html).
Lecture 2: Summarizing data using descriptive statistics and visualizing data using charts (chapter 2.1-2.6)
Lecture 3: Probability theory for the sample mean (chapter 3.1-3.3, 3.8 and appendix B)
Assignment 1 due Friday Oct 6
Lecture 4: Probability theory for the sample mean (chapter 3.4-3.7)
Lecture 5: Statistical inference based on the sample mean: confidence intervals and hypothesis tests (chapter 4.1-4.7)
Assignment 2 due Friday Oct 13

B. BIVARIATE REGRESSION: The relationship between two economic variables
Lecture 6: Bivariate regression for data summary: scatter plots, correlation and regression (chapter 5.1-5.6)

Lecture 7: ***** First midterm exam in class covers chapters 1-4 *****

Lecture 8: Bivariate regression for statistical inference: basics (chapter 6.1, 7.1-7.5)
Lecture 9: Bivariate regression: further details (chapter 5.8-5.12, 6.2-6.4, 7.6-7.7)
Assignment 3 due Friday Oct 27

C. MULTIPLE REGRESSION: The relationship between more than two economic variables
Lecture 10: Multiple regression for data summary (chapter 10.1-10.8)
Lecture 11: Inference for multiple regression (chapter 11.1-11.5)
Assignment 4 due Friday November 3
Lecture 12: Regression case study: Academic performance and parents' education (chapter 13.1)

Lecture 13: ***** Second midterm exam in class *****

Lecture 14: Models with natural logarithms (chapter 9.1-9.6)
Lecture 15: Indicator Variables (chapter 14.1-14.4)
Lecture 16: Further topics: Robust errors (ch.12.1), prediction (ch 12.2)
Assignment 5 due Wednesday November 22
Lecture 17: Regression Case Study: Automobile Fuel Efficiency (chapter 13.4)

Lecture 18: Regression with transformed variables (chapter 15.1-15.7)
Lecture 19: Checking the Model and Data (chapter 16.1-16.6)
Lecture 20: Review.
Assignment 6 due Friday December 8

Required Materials:

A. Colin Cameron, *Analysis of Economics Data: An Introduction to Econometrics.*
The text is available from Amazon for $25 paperback or $6.99 for a Kindle replica book.
A Kindle replica book is just a pdf but requires downloading the Kindle App to your PC, Mac, Android or iOS.
Copies of the text are also on Reserve at the Library.

Slides for the course text are available at http://cameron.econ.ucdavis.edu/aed/
The datasets and Stata programs used in the course text are at http://cameron.econ.ucdavis.edu/aed/

Additional Materials:
The course Canvas site has assignments under Files/ Homeworks. Assignments should be uploaded to Canvas under Assignments.
The website http://cameron.econ.ucdavis.edu/e102/e102.html has past exams and solutions and some links to Stata material.
There are usually free tutors for 102: see http://economics.ucdavis.edu/undergrad-program/tutoring
The Khan Academy has excellent video tutorials and exercises. See https://www.khanacademy.org/math/ap-statistics

Reading List:

Topic	Lecture Notes	
A. Univariate	Chapters 1-4, Appendix B	
B. Bivariate Regression	Chapters 5-9	
C. Multiple Regression	Chapters 10-11, 12.1, 12.2, 13.1, 14-16	

Discussion Sections:
These are held in a university computer lab in Hutchison 93.

Computer Materials: Assignments use **Stata**.

We use the package Stata that is used primarily in economics, other social sciences and biostatistics.
To get started in Stata see http://cameron.econ.ucdavis.edu/stata/stata.html and especially http://cameron.econ.ucdavis.edu/stata/stataintro.html
Stata is installed in computer labs **93 Hutchison**, **2101 SCC.** To see whether these labs are available see https://computerrooms.ucdavis.edu/available/.
It is also available after hours in the **Virtual Lab** (evenings and weekends when labs are closed - see https://virtuallab.ucdavis.edu)
This video provides directions if you use the Virtual lab: Connect_virtual_lab_and_start_Stata.mp4

You can also purchase your own copy of Stata (recommended) - go to https://www.stata.com/order/new/edu/gradplans/student-pricing/
For this course and other economics classes the cheapest version Stata/BE is more than adequate and costs $48 (6 months), $94 (1 year); $225 (permanent copy).
To install Stata after it is purchased:
(1) Choose the correct operating system (e.g. Windows or Mac);
(2) Choose the correct version of Stata - the student price version is Stata/IC;

(3) When you first run Stata after installation it will ask for an "authorization code". These codes are given in a pdf attachment you will received in the email from Stata following purchase (some codes are lengthy and it is easiest to cut and paste them in).

The Stata code used in my ECN 102 text is at https://cameron.econ.ucdavis.edu/aed/aedSTATAprograms.html
And the datasets are at https://cameron.econ.ucdavis.edu/aed/aeddatasources.html

For more advanced Stata my book https://cameron.econ.ucdavis.edu/mus2/ can be accessed online through the UCD library. All the data and code for that book are available free at https://www.stata-press.com/data/mus2.html

The best ways to succeed in this class are

1. **Read** the chapters in the text before lecture
2. **Come to lecture** and take notes.
3. **Try the homework assignments** on your own
4. **Go to discussion section** where the TA will go over the homework and ask questions
5. **Do end-of-chapter exercises and past exams,** again without looking at your notes.

Assignments and Exams:

Assignments: 20% Due 10.00 a.m. **Fridays** October 6, 13, 27; November 3; **Wednesday** Nov 22; **Friday** December 8.
Midterm Exam1: 20% Thursday October 19
Midterm Exam2: 20% Thursday November 9
Final Exam: 40% Tuesday December 12 3.30 p.m.- 5.30 p.m. Comprehensive (about half on material up to 2nd midterm and about half the remainder).

Assignments: are posted on Canvas under Files / Homeworks. My solutions will also be posted there.
Assignments solutions by you are to be posted (as a pdf) on Canvas under Files / Assignments.

Assignments will generally be graded satisfactory (4 points) or unsatisfactory (0 points); very occasionally partial credit will be given.
Satisfactory means a serious attempt to answer at least 80% of the questions.Full solutions will be distributed. The lowest of the scores on the six assignments is dropped, i.e. no penalty for not handing in one assignment if the other five are graded satisfactory. No credit for late assignments.

Academic honesty is required - see below.

Exams are closed book with a mixture of short answer (about two-thirds) and multiple choice (about one-third) questions.
Some past exams and solutions are posted on Canvas.

FOR EXAMS YOU NEED TO BRING STUDENT PHOTO ID. I WILL DECIDE WHERE TO SEAT YOU. YOU CANNOT USE YOUR OWN CALCULATOR OR SMARTPHONE - CALCULATORS WILL BE PROVIDED.

Scores are posted at Canvas. You have one week from when work is first returned in class to raise any questions about grading.
AFTER THE FINAL EXAM IS TAKEN NO CHANGES WILL BE MADE FOR ANY REASON TO ANY SCORES RECORDED ON CANVAS.

Note that there is no automatic conversion formula such as an 85 is a B. Instead if 85 was the median (middle) score among all students who took the class then you would get the median grade which is most often B-. To let you know how you are going on each exam I give the distribution of the scores for the exam along with a "suggestive" grading curve. But the course grade is based on a course curve.

C**ourse grade** is determined by the total score, with weights given above. The assignments are graded on a generous scale (satisfactory or unsatisfactory), so most students will get full credit on the assignment portion. Therefore for most students the course score is determined by scores on the exams.
To indicate your progress I give a grade on each midterm. But the final grade is determined by summing the exam and assignment scores (and not by averaging the grades).

AFTER THE FINAL EXAM IS TAKEN NO CHANGES WILL BE MADE FOR ANY REASON TO ANY SCORES RECORDED ON CANVAS.

Academic Honesty: Academic dishonesty is unfair to the majority of students who are honest. To that end the Davis Division of the U.C. Faculty Senate has the following policies.
(1) All undergraduate and graduate course outlines (syllabi) should list or provide a link to the U.C. Davis Code of Academic Conduct which is at sja.ucdavis.edu/files/cac.pdf . This provides many leading examples of academic misconduct. You should read this.
(2) One specific example of academic honesty is copying from solutions to assignments given in previous 102 courses.
(3) If an instructor has a reasonable suspicion of academic misconduct, whether admitted by the student or not, the instructor shall report the matter to the Office of Student Support and Judicial Affairs.
(4) The instructor has authority to determine a grade penalty when academic misconduct is admitted or is determined by adjudication to have occurred; with a maximum grade penalty of "F" for the course.
Note that Student Support and Judicial Affairs may separately impose sanctions for academic misconduct, including community service, suspension and dismissal.

Out of class collaboration: You are allowed to work together in groups for the assignments, but each student must turn in an individual solution.
You are to indicate on the solution the names of the other students you worked with, if any that you worked with you on the problem set.
For Stata, each person must create their own Stata output and write up their own answers.
It is not a violation of this policy to submit essentially the same answer on an assignment as another student, but it is a violation of this policy to submit a close to exact or exact copy.

The most common form of academic misconduct in Economics 102 is copying from past assignment solutions or copying (close to exact or exact) from other students. The most common penalty for doing so (in addition to reporting to SSJA) will be to receive zero for that assignment and additionally having your course grade reduced by one grade (examples: a B becomes a C, or a B- becomes a C-).