ECON-4848-002 - Applied Econometrics

Spring 2020

Professor:	**Dr. Mahdieh Yazdani**	**Time:**	MWF 11:00 { 11:50
Email:	mahdieh.yazdani@colorado.edu	**O ce:**	ECON 04C
TA:	**Lauren Schechter**		
Email:	Lauren.Schechter@colorado.edu	**O ce:**	ECON 401

O ce Hours: MWF 12:00 pm - 1:15 pm, or by appointment.
TA's O ce Hours: T 1 - 2:30 pm & Th 9 - 11:30 am.

Course Description: The objective of this course is to learn how to analyze and interpret real-world data. This course provides practical hands-on training in using statistical software for empirical economics analysis. We will be using R (an open source programming language for statistical analysis and graphics). This course will enable you to carry out empirical studies in economics and related elds. The course meets in Humanities 1B45, each MWF from 11:00 AM { 11:50 AM.

Prerequisites: To enroll in this course, you must have completed Economics 3818 (or equivalent). To succeed, students will need a basic understanding of math and statistics. Students interested in more theoretical parts of econometrics will nd Economics 4818 as a complementary course.

Course Objective:

Problem Sets: There will be assigned 4 problem sets. You may work with a partner and turn in a single document. The problem sets consist of codding in R, data analysis and might include few multiple choices. You are encouraged to form study groups of two. You should submit your codes, results, your analysis and interpretation. You need to type your analysis and interpretation in LaTeX. Assignments will be collected at the beginning of the lecture. There will be incentives to turn in your assignment on time. I will apply a 25% penalty to assignment turned in after the deadline, for delays of at most 48 hours.

Research Paper: The goal of this course is to train you to perform and interpret analyses of economic data. You are highly encouraged to form study groups of two. You will write a paper on a topic of interest to you, focusing on analysis of relevant data. You need to type your paper in LaTeX. You should submit your codes, results, gures,tables, analysis, and interpretation in roughly 10 pages. To make sure that you have found an appropriate topic and data set and provide some guidance we will use the week of class-time 03/16 for meetings to discuss your research topic. Class will be cancelled during this week to allow for group meetings during class time). The research paper is due, in both electronic and hard copy, on Thurs, April 22, by 11 am. Each team will present their research paper for almost 15 minutes. The presentation will account for 40% of the research paper grade. In each group, the partners should both present their work in roughly equal proportion.

Exams: There will be two quizzes, one midterm, and one nal exam. Midterm and quizzes will be held in regular class hours. As extra chances your lowest quiz grade and your lowest problem set grade will be dropped. The nal exam will be held during the university's regular nal exam schedule. The nal exam will be cumulative. There will be no make-up exam unless you provide legitimate proof abiding by university regulations. Our assigned nal exam time from the Registrar is on Sunday 05/03, 7:30 - 10:00 pm. University policy provides students with three or more exams on the same day the right to reschedule exams.

Grading Policy:

Grade	Percent
Problem sets and quizzes	20%
Midterm	20%
Final Research Project	30%
Final exam	30%

There will be no make-up exams. If you miss an exam you will receive no credit unless you provide documentation of a medical or family emergency. In the case of a legitimate emergency, I will give no weight to the exam in the calculation of the nal grade, and other assignments will be re-weighted proportionately. If you foresee any con ict that will prevent you from taking an exam, please let me know as soon as possible.

Grade Disputes: If you believe an error occurred in the grading of an exam, quiz, or problem set, you must send me a detailed written request within ten days of receiving the grade. The request should speci cally mention which questions you believe were graded incorrectly and provide justi cation for why your answers deserved more credit. Such concerns will not be considered unless raised in a timely manner.

Tentative Course Outline:

Tentative Schedule	Resource: Introductory Econometrics: A Modern Approach, by Jeffrey M. Wooldridge
Programming	R Tutorial
Introduction	The Nature of Econometrics and Data Analysis
Chapter 2 & R Programming Tutorial	The Simple Regression Model (Cross-Sectional Data, Simple Regression Model, Ordinary Least Squares Estimates method, Fitted Values and Residuals, Goodness-of-Fit, Incorporating Nonlinearities in Simple Regression, The interpretation of \Linear" Regression, Expected Values and Variances of the OLS Estimators, and Gauss-Markov assumptions for Simple Regression Model.)
Chapter 3 & R Programming Tutorial	Multiple Regression Analysis (The Model with k Independent Variables, Holding Other Things Constant, Interpretation of Ordinary Least Squares, OLS Fitted Values and Residuals, A \Partialling Out" Interpretation of Multiple Regression, Goodness-of-Fit, Including Irrelevant Variables in a Regression Model, Omitted Variable Bias, and Multicollinearity.
Chapter 4 & R Programming	Multiple Regression Analysis: Inference (Testing Hypotheses, The t Test, p-Values, Confidence Intervals, and The F Test.
Midterm Exam	03/11
Project Meetings	Week of 03/16-03/20
Chapter 6 & R Programming	Multiple Regression Analysis: Further Issues (Using Logarithmic Functional Forms, Models with Quadratics, Models with Interaction Terms, Adjusted R-Squared, Controlling for Too Many Factors in Regression Analysis, Predicting y When $\log(y)$ Is the Dependent Variable.
Chapter 7 & R Programming	Multiple Regression Analysis with Qualitative Information: Binary (or Dummy) Variables (Describing Qualitative Information, A Single Dummy Independent Variable, Interpreting Coefficients on Dummy Explanatory Variables When the Dependent Variable Is $\log(y)$, Using Dummy Variables for Multiple Categories, Interactions Involving Dummy Variables, A Binary Dependent Variable, The Linear Probability Model, and Interpreting Regression Results with Discrete Dependent Variables.
Chapter 8	Hetroskedasticity, Consequences of Heteroskedasticity for OLS)
Final Paper Due	04/22, by 11 am (Hard copy and electronic copy)
Research paper presentations	04/24, 04/27, and 04/29
Final Exam	Sunday 05/03, 7:30 - 10:00 pm

University Policies:

Disability Accommodation: If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the https://www.colorado.edu/disabilityservices/students. Contact Disability Services at 303-492-8671 or mailto:dsinfo@colorado.edudsinfo@colorado.edu for further assistance. If you have a temporary medical condition or injury, see https://www.colorado.edu/disabilityservices/students/temporary-medical-conditions under the Students tab on the Disability Services website.

Classroom Behavior: Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the policies on https://www.colorado.edu/policies/student-classroom-course-related-behavior and the https://www.colorado.edu/sccr/.

Preferred Student Names and Pronouns: CU Boulder recognizes that students' legal information

doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

Honor Code :