

ECON5397 Special Topics: Methods of Economic Data Analysis

Course Information

Course Prefix, Number	ECON5397.001
Course Title	Special Topics: Methods of Economic Data Analysis
Term	Spring 2022
Days & Times	MW 2:30-3:45pm

Professor Contact Information

Professor	Dong Li
Office Phone	(972) 883-3517
Email Address	econdongli@utdallas.edu
Virtual/Teams Office Hours	MW 1:00-2:00pm (https://tinyurl.com/officehours2022spring)

Course Pre-requisites, Co-requisites, and/or Other Restrictions

There is no formal prerequisite. You should know some basic statistic terms (such as mean/average, median, and histogram) and some basic economic terms (such as production function and consumer utility). You should also have reasonable computer skills.

Course Description

This course includes some popular methods used in economic data analysis. The computer language used in this class is R. The topics include, but are not limited to, basics of R language, writing R Markdown documents, reading data into R, data wrangling, graphing data, graphing economic models, statistical analysis, causal inference, analysis of time series data, and introduction to machine learning.

Student Learning Objectives/Outcomes

After taking the course, students are expected to be able to: (1) understand the basic methods to analyze economic data/models; (2) implement the methods and interpret the results; (3) communicate the results to peers and professionals; (4) conduct independent projects using obtained knowledge in the course to analyze economic data and present the projects clearly.

Required Textbooks and Materials

There is no required textbook. Class notes will be posted on eLearning. Please check eLearning often for new notes and homework assignments etc.

Suggested Course Materials

There are plenty of books on R available online. You are encouraged to seek out those books to supplement the lecture notes. Below please find a few reference books -- they can be better or worse than the ones you find on your own, depending on your learning style.

- Applied Econometrics with R, Kleiber and Zeileis, Springer, 2008.
- Business Analytics Using R - A Practical Approach, Hodeghatta and Nayak, 2017.
- Machine Learning Using R, Ramasubramanian and Singh, APress, 2017.
- An Introduction to Data Analysis in R, Saiz et al., Springer, 2020.
- Advances in Social Science Research Using R, Vinod (ed.), Springer, 2010.
- R Markdown: The Definitive Guide, Xie et al., CRC Press, 2019.

Academic Calendar

Weeks 1-2	Syllabus, R, RStudio, Basics of R language
Weeks 3-4	Writing R Markdown Documents
Weeks 5-7	Work Flow, Reading Data, and Data Wrangling
Weeks 8-9	Graphing Data and Economic Models
Weeks 10-11	Statistical Analysis and Regressions
Weeks 12-13	Causal Inference: Matching
Week 14-15	Smoothers and Generalized Additive Models
Week 16	Machine Learning: From Trees to Random Forests

The instructor may adjust the above schedule depending on student background and progress.

Classroom Conduct Requirements Related to Public Health Measures

UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester to the extent allowed by state governance. Texas Governor Greg Abbott's Executive Order [GA-38](#) prohibits us from mandating vaccines and face coverings for UT Dallas employees, students, and members of the public on campus. However, we strongly encourage all Comets to get vaccinated and wear face coverings as recommended by the CDC. Check the [Comets United: Latest Updates webpage](#) for the latest guidance on the University's public health measures. Comets are expected to carry out [Student Safety](#) protocols in adherence to the Comet Commitment. Unvaccinated Comets will be expected to complete the [Required Daily Health Screening](#). Those students who do not comply will be referred to the Office of Community Standards and Conduct for disciplinary action under the [Student Code of Conduct – UTSP5003](#).

Exams

All exams are comprehensive. There are two exams. The dates of the exams will be announced when they are available. Generally, there is no make-up exam. If you miss an exam without a properly documented excuse conforming to university policy, your grade will be zero for the missed exam(s). If you miss Exam 1 with a properly documented excuse conforming to university policy, your Exam 2 grade will be applied to the missed exam. If you miss Exam 2 with a properly documented excuse that is consistent with university policy, you will be given a make-up exam at the discretion of the instructor.

Quizzes, Homework, and Project

There will be short quizzes and homework assignments throughout the semester. The due date of each assignment will be announced. **No late assignment will be accepted.** Anticipate technical (internet, computer, windows, R, ...) issues – do not wait till five minutes before the due date/time to turn in (upload) your homework.

You **MUST** upload a copy of your homework by the due date to receive credit. Do not email assignments to the instructor or the TA as time stamps on emails can be easily manipulated. You can discuss the homework assignments with other students. But you must write your own answers.

Information about the project (and its presentation) will be made available at a later date.

Grading

Grades will be based on quizzes (20%), homework assignments and project/presentation (40%), and exams (40%).

Grading scales: 90-100=A (incl A+, A, A-, same below), 80-89.9=B, 70-79.9=C, 60-69.9=D, Below 60=F! I may adjust these scales when appropriate.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

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Install R and R Studio on Your Laptop

The core R is available in our classroom/lab. However, it is much easier if you have your own laptop so that you do not have to install additional packages every time. You are encouraged to bring your own laptop to the class. Instructions on installing the software on your laptop will be provided. An alternative is to use R Studio cloud at <https://rstudio.cloud/> - the free account is quite limited in features.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students.

Please see <http://go.utdallas.edu/academic-support-resources>.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus. Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

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The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

(This version January 11, 2022)

ECON 4396 Selected Topics: Methods of Economic Data Analysis

Dr. Dong Li

Email: econdongli@utdallas.edu

Tel: (972) 883-3517

Office Hours in MS Teams: MW 1:00-2:00pm or by appointment (same link can be found in eLearning)

Course Web: <https://www.utdallas.edu/elearning/>

Section 001

Spring 2022

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