

Applied Business and Economics Data Analysis I / Econometrics I
Econ 5336 - 002 / BSAD 6317 - 002
Fall 2017

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Class Hours: 2:00 – 4:50 PM TU

COB 349

Office Hours: 1:45 – 3:00 PM TH

and by appointment

“Econometrics is not a good tool when wielded blindly.”

Makoto Ohta and Zvi Griliches

“Research is not good simply because it is mathematical or statistical, or because it makes use of ingenious machines. Research is good if it is significant, if it is fruitful, if it is consistent with established principles, or if it helps to overthrow erroneous principles.” Henry Schultz

“...the real world is not as rational and dynamically optimal as economists would like to believe.” Robert Pindyck

“It is however always important to remember that the ability to see things in their correct perspective may be, and often is, divorced from the ability to reason correctly and vice versa. That is why a man may be a very good theorist and yet talk absolute nonsense.” Joseph A. Schumpeter

“If you are looking for a career where your services will be in high demand, you should find something where you provide a scarce, complementary service to something that is getting ubiquitous and cheap. So what’s getting ubiquitous and cheap? Data. And what is complementary to data? Analysis.” Hall Varian

Course Description

This course develops an understanding of key statistical and econometric techniques. Participants exploit real data and computational power to uncover patterns/trends, examine relationships in business and economics, evaluate research claims, come to conclusions, and make predictive judgments. There is a dual focus on conceptual framework and the application of techniques to data sets in various fields. Participants learn how to use statistical packages such as EXCEL, R, SAS and STATA to apply the tools to real data. Students are expected to complete a term project, which involves posing a problem, collecting appropriate data set, conducting an empirical analysis, and writing the results in the form of a short research paper.

Course Objectives/Student Learning Outcomes

By the end of the course, students should gain an understanding of the problems that inherently arise from business and economic data and how to address them. They should

obtain the necessary knowledge and skills to be able to critically assess the work in the literature, and apply the techniques to their own analysis/research. They should be able to formulate and estimate a model, state and test hypotheses of interest, interpret and use the results of the model for economic and business analysis. They should be able to implement the basic steps for carrying out an empirical analysis, which is desirable to many employers, such as government agencies, business firms, and universities. Participants are expected to develop knowledge and competencies needed to contribute to data analysis in public (government agencies, central banks, cities) and private/business fields (consulting, transportation, financial, energy, health). **Prerequisites:** Consent of the instructor

Recommended Textbooks

Greene, W. *Econometric Analysis*. 5th Ed. Prentice Hall Co. 2003 (G).

Wooldridge, J. M. *Econometric Analysis of Cross Section and Panel Data*, MIT Press, 2002 (WJ).

Gujarati, D. N. *Basic Econometrics*, McGraw-Hill, 3rd Edition, 1995 (GD).

Hamilton, L. C. *Statistics with Stata*, Brooks/Cole, 2004 (H).

Required Textbook

Wooldridge, J. M., *Introductory Econometrics: A Modern Approach*, South-Western College Publishing, 3rd, 4th, or 5th edition (W).

Although this is the textbook that we will follow, the lectures will also be based on some of the articles in the economics and business literature. Throughout the semester, I will assign required readings and the articles for which you need to write a report. I will post this information on the class conference. **I do not always stick to the book. You are responsible for all material, including topics covered in class that are not in the book or are treated differently from the book.** We will review the background statistical tools. They are also available in the appendices of the text for your own reading.

Important Dates

First Day of Semester: Thursday, August 24

Thanksgiving Break: Thursday-Friday, November 23-24

Midterm Exam: Tuesday, October 24, in class

The proposal is due Tuesday, October 17

Last Day to Drop Classes: Wednesday, November 1

The final paper is due Thursday, December 5

Final Exam Dates: December 9-14

Final Exam: Tuesday, December 12, 2:00-4:30 PM, in class

Course Schedule/Outline

(Note that this is a tentative schedule subject to modification during the course of the semester. If any changes are made they will be announced in advance.)

Dates	Topics
29-Aug	Course Overview and Motivation (Ch. 1)
29-Aug	Review of Basic Statistics
5-Sep	Simple Regression Model (Ch. 2)
12-Sep	Multiple Regression Analysis: Estimation (Sec. 3.1, 3.2, 3.3, 3.4, 3.5, App. 3a)
19-Sep	Multiple Regression Analysis: Inference (Sec. 4.1-4.5)
26-Sep	Multiple Regression Analysis (Cross-Section): Asymptotics (Ch. 5)
3-Oct	Multiple Regression Analysis (Cross-Section): Further issues (Sec. 6.1-6.4)
10-Oct	Multiple Regression Analysis (Cross-Section) with Qualitative Information: Binary/Dummy Variables (Sec. 7.1-7.6)
17-Oct	More on Specifications and Data Problems (Sec. 9.1-9.4) Computer Lab Session
24-Oct	Midterm Exam
24-Oct 31-Oct	More on Specifications and Data Problems
31-Oct	Interactions and Mediation
7-Nov	Bootstrapping
7-Nov 14-Nov	Heteroskedasticity (Sec. 8.1-8.4)
14-Nov 21-Nov	Serial Correlation (Sec. 10.1-10.5) Computer Lab Session
28-Nov	Limited Dependent Variable Models: Linear Probability Model (Sec. 7.5 and 17.1-17.5)
28-Nov 5-Dec	Pooling Cross Sections Across Time/Panel Data Methods: Least Square Dummy Variable Model
5-Dec	If time allows: Difference-in-Difference Estimation / Natural Experiments (Ch. 13) Correlation Versus Causation: Endogeneity (Sec. 3.3,15.1,15.2, 15.3,15.5)
5-Dec	The Final Paper is Due
12-Dec	Final Exam, 2:00-4:30 PM, in class

Descriptions of Examinations and Major Assignments

Exam – The examination tests both your understanding of the concepts studied in the course and your ability to apply them to problem situations. Use of electronic calculators is expected, but computational methods must be clearly indicated in your answers for homework, in-class applications, and examination. If you have conflicts with the exam date contact me immediately (prior to the exam dates). Missed exam will be given a grade of zero unless adequate evidence is presented, preferably before the exam.

Term Project – The term project involves posing a problem, collecting or obtaining an appropriate data set, conducting an econometric analysis, and writing the results in the form of a short research paper. Participants are free with instructor consent to choose a topic of personal interest within their own field. You are free to use this as an opportunity to get started on or extend some of your own research. You are asked to work in groups of 2 or 3. To ensure timely progress, I will set up two deadlines for submission of: (1) a preliminary paper proposal that describes the problem statement, literature review and the data set to be used for early comment, and (2) the final version of your manuscript. I envision the proposal to be about 1-3 pages and the final draft 10-25 pages, double-spaced. The proposal is due **October 17**. The final paper is due **December 5**. I will give you a more detailed description of the project during the semester, but at this point I suggest you start thinking about topics that you would like to address. Throughout the term we will discuss various topics that hopefully will trigger ideas of your own.

Problem Sets/Homework – There will be problem sets assigned as homework. Use of the real data sources, such as Compustat/WRDS and World Development Indicators, will be expected for few assignments. The class will have access to the WRDS, which provides access to COMPUSTAT, CRSP, IBES, NYSE-TAQ, Bureau van Dijk, Global Insight, OptionMetrics and many other good data sets. Students can access this data using the user id and password that I will provide. You can connect to the WRDS and WDI databases by visiting the library databases at <http://www.uta.edu/library/databases>. The purpose of these assignments is to aid in learning applications of econometric methods to problem situations and to provide an opportunity for individual feedback regarding the applications of concepts and models involved. Failure to hand-in homework on time will merit a grade of zero, unless prior arrangements have been made.

Computer Applications - Use of the econometric software of your choice, such as GAUSS, OX, STATA, SAS, and TSP, will be expected for the assignments. I will provide instructions for the use of STATA and EXCEL. I also plan to provide some instructions for the use of SAS and R. There are extensive web-based tutorials on the use of EXCEL, STATA, R, and SAS for regression analysis. I will teach how to get started with STATA, R, and SAS. If you would like to obtain a copy of STATA for your own use, you may order it through the StataGradPlan (<http://www.stata.com/order/educational-license-options/#gradplan>). These assignments allow you to consolidate and apply the concepts and techniques discussed in the class.

Verbal Reports and Class Discussion - You will also be expected to discuss some assigned articles in class. You will write reports (a maximum of 1 single-spaced typed page) and then discuss them verbally in class. *A randomly chosen participant(s) will be asked to summarize the paper for about 3 minutes. The papers will be announced ahead of time.*

Understanding of some papers comes only through detailed written analysis. Verbal reports also help ensure adequate understanding of the material. A verbal report is a structured evaluation and overview of a paper. Although many formats are effective, a possible format for the verbal report will be provided. Feel free to use this form or to

develop your own form. You are expected to come to class prepared for discussion, having read the assigned paper(s).

Group Assignments

You will be asked to form a group of no more than three people during the first week of class. Please have one of the group members email me with the names of the members. Group assignments include the homework assignments, verbal reports, and a term project.

Blackboard

I will use Blackboard, an electronic learning software platform, for the distribution of course information. There are detailed instructions on the use of Blackboard that can be accessed at <http://www.uta.edu/blackboard/index.html>. Be sure to check it on a regular basis for announcements, lecture notes, case studies, data sets, assignments, and other material related to class.

Attendance

There will be two sessions of about 80 minute. A 10 minute break in between will be given. Attendance is not mandatory but you are virtually guaranteed to do poorly if you skip classes. **I do not always stick to the book. You are responsible for all material, including topics covered in class that are not in the book or are treated differently from the book.**

I will not factor attendance at class meetings into the grade, but attendance is strongly encouraged. At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance.

Grading

The grade in the course will be based on reports and weekly problem sets (18%), a term project (8%), a midterm exam (34%), and a comprehensive final exam (40%). The grading scheme is as follows. 90-100% (A); 78-89.9% (B); 70-77.9% (C); 60-69.9% (D); < 59.9% (F).

Expectations for Out-of-Class Study

Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 18 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

Make-up Exams

Missed exam will be given a grade of zero unless adequate evidence is presented, preferably before the exam that missing the exam cannot be avoided.

Participant-Faculty Communication

You are expected to come to class prepared by reading and doing relevant assignments prior to class. You are expected and encouraged to ask questions and participate in class discussions. Your ideas, comments, suggestions, questions, etc. are always welcome. You can drop by my office anytime if you have any questions or concerns. You may come during office hours, or schedule an appointment because I may not be there all the time. I can also be reached through email or voice mail. I endeavor to create an atmosphere that is favorable for learning through the encouragement of creativity, self-initiative, and dialogue. You are encouraged to ask questions in order to stimulate discussion and enhance understanding. **Please do not hesitate to see me if you have difficulty with the course material or need to discuss something with me.** I look forward to working with you this semester.

Grade Grievances

Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate catalog. For undergraduate courses, see <http://catalog.uta.edu/academicregulations/grades/#undergraduatetext>; for graduate courses, see <http://catalog.uta.edu/academicregulations/grades/#graduatetext>. For student complaints, see <http://www.uta.edu/deanofstudents/student-complaints/index.php>.

Drop Policy

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

Disability Accommodations

UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA), and Section 504 of the Rehabilitation Act. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services

and/or accommodations by contacting: The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy

The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX Policy

The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.

Academic Integrity

Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

Electronic Communication

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

Student Feedback Survey

At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture,” “seminar,” or “laboratory” are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback via the SFS database is aggregated with that of other students enrolled in the course. Students’ anonymity will be protected to the extent that the law allows. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week

For semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures

Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located. When exiting the building during an emergency, one should never take an elevator but should

use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

University Tutorial & Supplemental Instruction (Ransom Hall 205): UTSI offers a variety of academic support services for undergraduate students, including: 60 minute one-on-one tutoring sessions, Start Strong Freshman tutoring program, and Supplemental Instruction. Office hours are Monday-Friday 8:00am-5:00pm. For more information visit www.uta.edu/utsi or call 817-272-2617.

The IDEAS Center (2nd Floor of Central Library) offers FREE tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. Students can drop in, or check the schedule of available peer tutors at www.uta.edu/IDEAS, or call (817) 272-6593.

The English Writing Center (411LIBR): The Writing Center offers FREE tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at <https://uta.mywconline.com>. Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see www.uta.edu/owl for detailed information on all our programs and services.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. <http://library.uta.edu/academic-plaza>.

Emergency Phone Numbers

In case of an on-campus emergency, call the UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911. Non-emergency number 817-272-3381

Useful Library Links

Library Home Page<http://www.uta.edu/library>

Subject Guides<http://libguides.uta.edu>

Database List.....<http://www-test.uta.edu/library/databases/index.php>

Course Reserves.....<http://pulse.uta.edu/vwebv/enterCourseReserve.do>
Library Catalog.....<http://discover.uta.edu/>
E-Journals.....<http://utalink.uta.edu:9003/UTAlink/az>
Library Tutorials.....<http://www.uta.edu/library/help/tutorials.php>
Connecting from Off- Campus.....<http://libguides.uta.edu/offcampus>
Ask A Librarian.....<http://ask.uta.edu>
Business Library.....<http://www.uta.edu/library/eb/>