

BASIC INFORMATION

DATE/TIME CONVENTIONS: unless otherwise specified, all dates are formatted in the US style of month/day or month/day/year, such as 8/7 for August 7, or 1/8/18 for January 8, 2018. Times refer to the local time in Columbia, Missouri, which is in the US Central Time Zone. Note that Missouri observes “daylight savings time,” so sometimes Central Time is UTC-5 (i.e., Coordinated Universal Time minus 5 hours) and sometimes UTC-6. You can always Google “Missouri time” to check the current time.

INSTRUCTOR: David M. Kaplan

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ONLINE COURSE ACCESS: Canvas, <https://courses.missouri.edu/>

VIRTUAL OFFICE HOURS: every Wednesday 10:00am–12:00pm Missouri time; excludes Thanksgiving week, but includes final exams week. I will be online and focus only on replying to your discussion board posts and emails (in the order they are posted/sent). At other times, please allow 48 hours for a response.

DISCUSSION BOARD: for general questions (i.e., not specific to you personally), you may post to the discussion board on our course website. I will monitor it throughout the week and exclusively focus on it (and emails) during my virtual office hours (per above).

TEXTS AND MATERIALS

TEXTBOOK: *Introduction to Econometrics*, 3rd edition (updated), by James H. Stock and Mark W. Watson. The companion website is at https://wps.aw.com/aw_stock_ie_3/. The digital version should be available through Canvas using AutoAccess. I may very occasionally refer to Bruce Hansen’s online (free) econometrics lecture notes, which provide greater theoretical depth, and there is also an online, free undergraduate econometrics book from Francis Diebold (although I have not read it carefully yet); these are respectively available at:

<https://www.ssc.wisc.edu/~bhansen/econometrics/>

<http://www.ssc.upenn.edu/~fdiebold/Textbooks.html>

SOFTWARE: we will use statistical software throughout the semester; you may choose to use either Stata or R. My brief opinion about the trade-off: Stata makes it much, much easier to do 95% of what applied economists do (and you can easily export a dataset to run a function in R for the other 5%), including everything we’ll do this semester; but R is free and easier to write your own functions in, which may be helpful in certain fields or industries. R is open-source and freely available online to download onto your personal computer; for getting started, see (for example) the chapter “R: guide to (some) basics” at https://faculty.missouri.edu/~kaplandm/9476/Kaplan_9476_notes.pdf. R can also be used through a web browser on various sites like <https://jupyter.org/try> or https://www.tutorialspoint.com/r_terminal_online.php or <https://cocalc.com/>. Stata can be used (for free) either at Windows computing sites on campus or from home via Software Anywhere; see <https://doit.missouri.edu/software/software-anywhere.html> for details on getting connected. However, Software Anywhere can be very slow, depending on your internet connection speed and how many other students are using it at the same time. Since it is impossible to predict when other students will be using Software Anywhere, I strongly suggest doing the empirical assignments well before the

deadlines if you use Software Anywhere. Alternatively, you may purchase a 6-month Stata/IC license for \$45 (student price); see <https://www.stata.com/order/new/edu/gradplans/student-pricing/>. Then, you can run Stata on your own computer (locally), which is faster and more reliable than Software Anywhere.

COURSE DESCRIPTION

This class provides an introduction to econometrics. The treatment is more practical than theoretical (i.e., no proofs), but theoretical assumptions and results are discussed, and mathematical analysis provides deeper and more precise understanding of practical concerns. Practical methods covered include cross-sectional regression (linear and nonlinear in regressors), panel data estimators, methods for binary outcomes, and instrumental variables, as well as methods for (classical) statistical inference. Stata or R statistical software is used for empirical examples. In addition to practical skills, there is an emphasis on critical thinking about causality and about interpreting results both economically and statistically.

COURSE GOALS (LEARNING OBJECTIVES)

By the end of the semester, you will be able to do the following.

- Define terms from probability, statistics, and econometrics, both mathematically and intuitively.
- Describe various econometric methods both mathematically and intuitively, including their objects of interest and assumptions, and the logical relationship between the assumptions and corresponding theorems and properties.
- Explain the frequentist/classical statistical and asymptotic frameworks, including their benefits and limitations.
- Provide multiple possible (causal) explanations for any statistical result, distinguishing between statistical and causal relationships.
- For a given economic question, dataset, and econometric method, judge whether the method is appropriate and judge the economic significance and statistical significance of the results.
- Using Stata or R: manipulate and analyze data, interpreting results both economically and statistically.

ONLINE COURSE ACCESS AND TECHNICAL HELP

You may access the course via <https://courses.missouri.edu/>. Select Canvas and enter your Paw-Print (and password).

If you have difficulty logging in or do not see the course listed, or for any other technical difficulty, please contact the Mizzou IT Help Desk; see <https://doit.missouri.edu/tech-support/> for phone, chat, email, or in-person help.

TECHNICAL SKILLS REQUIRED

This class is fully online, so you must have reliable access to a computer connected to the internet. Other minimal technical skills are required, such as using Canvas (the course website), attaching documents, and using a text editor (e.g., Word, WordPad, or TextEdit). Additionally, we will use Stata or R, as detailed above; this will require either downloading and installing the Stata or R software on your computer, or else downloading and installing (as needed) VPN and virtual desktop software and using both to connect to the Software Anywhere server.

LIBRARY RESOURCES AND E-RES

You may access the University of Missouri Library Distance Education Support Service page at <https://libraryguides.missouri.edu/distance/>.

EXPECTATIONS

What to Expect from a Technology-Enhanced Course This course is designed to meet virtually. It is essential that you access the course site Monday through Friday to read course announcements, access and submit exercises, interact on the discussion board, etc.

What Your Peers and I Expect from You You are expected to participate in any group discussions on the discussion board, showing respect for others, and helping or receiving help as appropriate. You are also expected to have a foundational understanding of internet terms and functions. All general class correspondence should be submitted to the relevant Discussion Board forum; only personal or confidential matters should be sent to me personally in email.

What You May Expect from Me You may expect me to do the following.

- Monitor and facilitate any class discussions (Monday through Friday).
- Respond to private email questions within 48 hours.
- Provide timely feedback on assignments.
- Help build a learning community.
- Welcome your feedback on the class and consider it seriously even if I ultimately disagree. Past students' feedback has helped me understand students better and improve this class; you are now benefiting from their comments.
- Provide you with ample opportunity to practice your new skills and understanding, which is critical to learning. Imagine training for a marathon by listening to lectures on running form and reading books about optimal training routines without ever actually running or exercising. It is just as foolish to have training in econometrics without any exercise sets.
- Be patient when you are struggling with a new concept; this is how learning occurs, actively and not passively.

- Treat you with respect, as fellow adults who want to learn more about my favorite subject: econometrics!

COURSE SUCCESS

To succeed in this class, you should do the following.

- Try hard on all assigned exercises.
- Ask questions when you need help.
- Start the assignments as early as possible in order to realize what you don't understand in time to ask questions.
- Ask questions of your classmates through the discussion board.
- Deepen your understanding by attempting to answer your classmates' questions.
- Respect your classmates: listen first, think second, talk/type third.
- For any email you send me, use your MU email account and put "ECON 4371/7371: " at the beginning of the Subject; or, email me through the course website.

Regarding the debated existence of "dumb questions": I personally find some questions to be smarter than others (having asked my own share of "dumb" questions over the years), but you can expect me to treat you with the same level of respect regardless of your question's content. I highly value all honest questions.

GRADUATE CREDIT

For credit in ECONOM 7371, you have to do all of the assignments; you may not drop any scores (as described below for ECONOM 4371).

WEEKLY SCHEDULE AND ASSIGNMENTS

Each week, you should expect to log in to the course site multiple times. Each week has a corresponding instructional unit that includes your assigned reading, instructor commentary, and exercises.

If you are enrolled in ECONOM 4371 (not 7371), then you may choose not to submit three exercise sets and two empirical exercises. More specifically, your three lowest exercise set scores and two lowest empirical exercise scores will be replaced by scores of 95%. (If you're in ECONOM 7371, then no scores will be replaced.) Of course, you may still wish to do and submit all the exercise sets and empirical exercises to learn from them, or if you're trying for an A+.

See Table 1 for the schedule of topics, assignments, and exams. In the Assessment column of the table, "ES" stands for "exercise set." Each ES is a set of multiple choice questions you complete in Canvas, corresponding to the chapter; e.g., in Week 1, when we cover Chapter 1, you work on "Exercise set for Chapter 1." Also in the Assessment column, "Empirical" refers to an empirical exercise, which consists of writing Stata or R code, along with some short verbal discussion; these assignments are also

submitted through Canvas, where there are further details. The exams will all be through Canvas and multiple choice, very similar to the ESs, but with more questions and more restricted time (see Canvas for details). Note: “Week 16” means final exams week; due dates are month/day format.

Table 1: Schedule of topics, assignments, and exams.

Week	Chapter	Topic	Assessment	Due
1	1	Economic Questions and Data; software intro	ES; Empirical	8/27
2	2	Review of Probability	ES	9/3
3	3	Review of Statistics	ES; Empirical	9/10
4	4	Linear Regression with One Regressor	ES; Empirical	9/17
5	4	Linear Regression with One Regressor	ES	9/24
6	1–4	[review]	exam	9/28
7	5	Hypothesis Tests and Confidence Intervals	ES; Empirical	10/8
8	6	Multiple Regressors	ES; Empirical	10/15
9	7	Tests and CIs (Multiple Regressors)	ES; Empirical	10/22
10	8	Nonlinear Regression Functions	ES; Empirical	10/29
11	5–8	[review]	exam	11/2
12	9	Assessment of Regression Studies	ES	11/12
13	10	Panel Data	ES; Empirical	11/19
14	12	Instrumental Variables	ES; Empirical	12/3
15	13	Experiments and Quasi-experiments	ES; Empirical	12/10
16	all	[review Chapters 1–10, 12–13]	exam	12/14

LATE WORK POLICY

For exercise sets, solutions will be posted at the submission deadline. Late submissions will receive a score of zero. All students will take exams at the same time.

In case of an emergency such as serious illness, family emergency, or a legitimate conflict with recognized University activities, you must contact me immediately (i.e., before the exam or deadline) to request a makeup assessment and provide documentation of the emergency. If you miss (and don’t make up) both midterm exams or the final exam, then you will receive an “incomplete” for your semester grade.

GRADING CRITERIA

Plus/minus grading is used in this course, and the final exam is mandatory. Relative weighting of assignments is shown in Table 2.

Letter grades will be mapped in the usual way, i.e., A range is 90–100% (with 97.5% the threshold for A+ and 92.5% the threshold between A- and A), B range 80–89.99% (similarly for +/-), C 70–79.99%, D 60–69.99%, F below that. Any “curve,” if it seems appropriate, will *not* enforce predetermined grade *proportions* but rather move everyone up together; you are not competing with other students for a fixed number of A grades.

Table 2: Relative weighting of assignments (percent of total).

Assignment	Percent
ES	26
Empirical	20
Midterm exam #1	15
Midterm exam #2	15
Final exam	24
Total	100

ONLINE CLASS NETIQUETTE

Your fellow students and I wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment on, question, or critique an idea, but you are not to attack an individual.

Our differences, some of which are outlined in the University's nondiscrimination statement below, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambience.

ACADEMIC INTEGRITY POLICY

Academic integrity is essential to our institutional values of respect, responsibility, discovery, and excellence. These values are fundamental to the everyday function of our academic community, as well as to the goals and vision we have for the University of Missouri. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from me (the instructor), including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, ask me through the online Discussion Board.

Academic Dishonesty includes but is not necessarily limited to the following.

- A. Cheating or knowingly assisting another student in committing an act of cheating or other academic dishonesty.
- B. Plagiarism that includes but is not limited to submitting examinations, themes, reports, drawings, laboratory notes, or other material as one's own work when such work has been prepared by another person or copied from another person.
- C. Unauthorized possession of examinations or reserve library materials, or laboratory materials or experiments, or any other similar actions.

D. Unauthorized changing of grades or markings on an examination or in my grade book or such change of any grade report.

Each member of our community—faculty, staff, and students alike—must be committed to the principles of honesty and fairness. Faculty and staff are expected to model appropriate behavior and demonstrate their commitment to our community. Students also bear responsibility for upholding the culture of integrity in our community. Maintaining this culture, and our institutional values, requires that students do not tolerate the actions of those community members who engage in inappropriate behavior.

Academic integrity ensures that all students have a fair and equal opportunity to succeed. Any behavior that provides an unfair advantage to one student is unacceptable and will not be tolerated. Each piece of work completed by a student must be solely a reflection of that student’s own work or his or her contribution to a collaborative effort.

ACADEMIC INTEGRITY PLEDGE: “I strive to uphold the University values of respect, responsibility, discovery, and excellence. On my honor, I pledge that I have neither given nor received unauthorized assistance on this work.” Students are expected to adhere to this pledge on all graded work whether or not they are explicitly asked in advance to do so.

The University has specific academic dishonesty administrative procedures. Although policy states that cases of academic dishonesty must be reported to the Office of the Provost for possible action, I also may assign a failing grade for the assignment or a failing grade for the course, or may adjust the grade as deemed appropriate. I also may require the student to repeat the assignment or to perform additional assignments. In instances where academic integrity is in question, faculty, staff, and students should refer to Article VI of the Faculty Handbook. Article VI is also available in the M-Book. Article VI provides further information regarding the process by which violations are handled and sets forth a standard of excellence in our community.

UNIVERSITY OF MISSOURI NOTICE OF NONDISCRIMINATION

The University of Missouri System is an Equal Opportunity, Affirmative Action institution and is nondiscriminatory relative to race, religion, color, national origin, sex, sexual orientation, age, disability, or status as a Vietnam-era veteran. Any person having inquiries concerning the University of Missouri’s compliance with implementing Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans With Disabilities Act of 1990, or other civil rights laws should contact the Assistant Vice Chancellor, Human Resource Services, University of Missouri, 1095 Virginia Avenue, Columbia, MO 65211, (573) 882-4256, or the Assistant Secretary for Civil Rights, U.S. Department of Education.

STUDENTS WITH DISABILITIES

If you anticipate barriers related to the format or requirements of this course, if you have emergency medical information to share with me, or if you need to make arrangements in case the building must be evacuated, please let me know as soon as possible.

If disability-related accommodations are necessary (e.g., extended time on exams, captioning), please

register with the Office of Disability Services, S5 Memorial Union, (573) 882-4696, <http://disabilityservices.missouri.edu/>, and then notify me of your eligibility for reasonable accommodations. For other MU resources for students with disabilities, click on “Disability Resources” on the MU homepage.

INTELLECTUAL PLURALISM

The University community welcomes intellectual diversity and respects student rights. Students who have questions or concerns regarding the atmosphere in this class (including respect for diverse opinions) may contact the Department Chair, Divisional leader, or Director of the Office of Students Rights and Responsibilities (<http://osrr.missouri.edu>); or the MU Equity Office at <http://equity.missouri.edu> or by email at equity@missouri.edu. All students will have the opportunity to submit an anonymous evaluation of me (qua instructor) at the end of the course.

GRIEVANCE POLICY

Information concerning student grade appeal procedures and non-academic grievances and appeals may be found in the Student Handbook.