

Instructor	Gray Calhoun (Heady 467, @gray on Slack)
TA	Jiaoting Shi (Heady 78, @jiaoting)
Schedule	Tues. and Thurs., 9:00–10:50, Heady 272. Fri., 9:00–10:50, Heady 64 and 272. (Lab)
Final exam	Tues. 12/13, 7:30–9:30, Heady 272
Office hrs	Mon., 1:30–3:30, Heady 467 (instructor) or by appointment (for the TA and instructor)

Online

Homepage	http://gray.clhn.org/671
Slack	https://IaStateEconometrics.slack.com
FAQ	https://trello.com/b/DqNaeswz

Reading

- [IW] Guido W. Imbens and Jeffrey M. Wooldridge. Recent developments in the econometrics of program evaluation. *Journal of Economic Literature*, 47(1):5–86, March 2009
- [Fr] David A. Freedman. *Statistical Models: Theory and Practice*. Cambridge University Press, revised edition, 2009
- [Ha] Fumio Hayashi. *Econometrics*. Princeton University Press, 2000. Required textbook
- [Ra] Ramu Ramanathan. *Statistical Methods in Econometrics*. Academic Press, 1993. Required textbook
- [Ru] Donald B. Rubin. For objective causal inference, design trumps analysis. *Annals of Applied Statistics*, 2(3):808–840, 2008
- [Th] William Thomson. *A Guide for the Young Economist*. MIT Press, 2nd edition, 2011. Recommended

Welcome to Econ 671! This class has three goals. You are going to study and learn fundamental techniques in econometrics and statistics so that you can use them in your future research. You are also going to learn some of the basic theoretical concepts in econometrics so that you can understand new techniques when you encounter them in future classes and later in your career. And, finally, you are going to learn how to use Stata to do statistical and econometric analysis. If you are not enrolled in the Economics PhD program, please talk to me after class about prerequisites.

We are going to use Slack (a messaging service) instead of email for class communications. You will receive an invitation soon (by email, unfortunately); please sign up quickly. If you have questions about the class, please read the FAQ and (if it doesn't answer your question) ask on the '#671' channel on Slack. The FAQ has answers to many commonly asked questions in this class and has links for more information on using Slack. We will use Blackboard Learn for grades and some homework submission, but that's it.

Topic	Quiz date	Reading
Introduction (week 1)		
Probability theory (2, 3)	8/30	[Ra] 2–3, 5.1–5.9
Asymptotic theory (4, 5)	9/13	[Ra] 5.10–7
Statistics (6–8)	9/27	[Ra] 8, 9
Finite sample OLS (9, 10)	10/18	[Ha] 1
OLS asymptotics (11–13)	11/01	[Ha] 2
<i>Thanksgiving break.</i> 11/21–11/25		
Causal inference (14, 15)	11/29	[IW], [Ru]
Final exam (7:30–9:30a)	12/13	Cumulative

Table 1: List of major units and required reading for the class. We will have graded team exercises during the last week of the semester (dead week).

1 Course structure and grades¹

This course uses the *Team-Based Learning* (TBL) instructional strategy, which is probably different from instruction styles you've had before. Most of the content will be introduced with readings and short problems completed outside of class. Activities and projects that would conventionally be done as out-of-class homework and group projects are done in teams during class. Grades will be determined by scores in three areas:

- *Individual Performance*
- *Team Performance* and
- *Peer Evaluations* by your teammates.

The weights of each component are listed in the next table.

Grade component	weight
<u>Individual performance</u>	
Quizzes (6) and exam (1)	40%
<u>Team performance</u>	
Quizzes (6)	20%
Team projects	40%
Peer evaluations	see §1.3

1.1 Quizzes and final exam. The course is split into six units of material that are listed in Table 1. There will be six short multiple-choice quizzes at the **beginning** of each unit of material; these will be taken as individuals first, then as a team. The quizzes will test

you on the reading assignments but are designed to establish a baseline level of understanding so that the team activities will be productive. You will not be expected to master the material until we have finished the unit. The course *Reading Guide* spells out in detail my expectations for what you will learn from the reading.

The final exam will be cumulative and has the same weight as one of the quizzes. You may drop your lowest individual quiz score (to accommodate emergencies or illness) or the final exam if you are satisfied with your performance on the previous quizzes. All of the team quiz grades are counted and there is no team component for the final exam.

¹This section borrows heavily from Larry Michaelsen's example course syllabus, available at <http://tblc.roundtablelive.org/resources/documents/4363-syllabus.pdf>.

1.2 Team performance. This course has two types of team activities. (1) Immediately after each individual quiz you will retake it again as a team. (2) Most class meetings will be spent working on graded team activities. We will assign students to teams in our first class meeting. All members of a team will receive the same score for team quizzes, including absent students. Only students present in class will be given credit for the team activities, however. Homework may be assigned for a team exercise and, if it is, completing the homework is necessary to get full credit for being “present.”

Some of the material in this class has been used in past years but you will learn the most in this class if you do the work yourselves. *You are not allowed to use material from previous years for team activities, homework, or any other component of this course, unless I provide it to you. Using this material will be considered cheating.* If you are not sure whether or not you are allowed to use a particular external reference, ask me.

1.3 Peer evaluation. At the end of the semester, you will assign a “peer evaluation” score to each of your teammates. This is meant to reward one or two members of your team if they have been especially important to your team’s success and your individual learning. You will have the option of giving (1) a 20% bonus to one student’s team performance score, or (2) giving a 10% bonus to one or two students. Doing this will reduce the team performance score of everyone else in the team proportionally, so the overall team score on your team does not change. If everyone on a team gives the 20% bonus to the same individual, his or her team score will be multiplied by 1.2. Otherwise his or her team performance score will be multiplied by the geometric mean of all of the adjustments.² Students are not allowed to reward themselves. These scores are meant to recognize any members of your team whose contributions are not reflected in the other grade components.

Students may also assign penalties of 5% to at most two students on their team. These are meant to be used rarely — when a student’s presence actually hurts the team’s performance. (If a student participates when he or she attends but is frequently absent, those absences will already be reflected in his or her team performance score.) These penalties are not offset by increasing the scores of other students; they result in a lower total team performance score for the team. Penalties are factored into the overall peer evaluation calculation in the same way as the rewards.

1.4 Determination of final grades. Course grades will be based on each student’s standing in the overall distribution of total individual scores within the class. The actual impact of any score on an individual student’s final grade depends on both his or her actual score and also how high he or she scores relative to other members of the class. The conventional practice of 90% is an A, 80% is a B, etc. simply does not apply.

²The *geometric mean* of the numbers x_1, \dots, x_n is the product $\prod_i x_i^{1/n}$. We are using it instead of the arithmetic mean (the sample average) because the adjustment is multiplicative.

2 University policies

2.1 Academic dishonesty. The class will follow Iowa State University’s policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office.³

2.2 Disability accommodation. Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact the instructor to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with the instructor, you will need to obtain a SAAR form with recommendations for accommodations from the Student Disability Resources,⁴ located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email disabilityresources@iastate.edu. Retroactive requests for accommodations will not be honored.

2.3 Dead week. This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook.⁵

2.4 Harassment and discrimination. Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance⁶ at 515-294-1020 or email dso-sas@iastate.edu, or the Office of Equal Opportunity and Compliance⁷ at 515-294-7612.

2.5 Religious accommodation. If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office⁸ or the Office of Equal Opportunity and Compliance.⁹

2.6 Contact information. If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu.

³<http://www.dso.iastate.edu/ja/academic/misconduct.html>

⁴<http://new.dso.iastate.edu/dr/student>

⁵<http://www.provost.iastate.edu/resources/faculty-handbook>

⁶<http://new.dso.iastate.edu/sa/>

⁷<http://www.hrs.iastate.edu/hrs/node/99>

⁸<http://new.dso.iastate.edu/>

⁹<http://www.hrs.iastate.edu/hrs/node/269>