Course Orientation and Economic Questions

24 Aug 2026 | Course orientation + Chapter 1

ECO 351 – Introduction to Econometrics

Shi Qiu – Fall 2026

Today's plan

Course orientation and Chapter 1

We will first make the course rules and expectations transparent, then begin the book's economic way of thinking.

0–5 min	Welcome, class logistics, and how to contact me
5–25 min	Syllabus: resources, grading, dates, attendance, and integrity
25–35 min	What econometrics asks and what counts as evidence
35–55 min	Economic questions, causal effects, and types of data
55–68 min	Class-size application and guided practice
68–75 min	Questions, exit ticket, and preparation for Lecture 2

Welcome to ECO 351

Class meetings

Monday and Wednesday
2:00–3:15 p.m.
SBA 0005

Instructor

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What this course is about

Using data to describe economic relationships, quantify uncertainty, and evaluate causal claims.

Materials, communication, and help

- **Textbook:** Stock and Watson, *Introduction to Econometrics*, 3rd edition.
- **Software:** Stata will be used in dedicated sessions and the term project.
- **iLearn and AUS email:** slides, data, announcements, and assessment information. Check both regularly.
- **Office hours:** Tuesday and Thursday, 11:00 a.m.–1:30 p.m., SBA 2082. Additional hours, when available, will be posted on iLearn.

Check: Bring a specific question, attempted calculation, graph, or output when you ask for help.

How a typical week will work

Before class	During class	After class
Read the assigned section and note unfamiliar terms.	Connect intuition, graphs, equations, discussion, and Stata output.	Redo examples without the solution and record remaining questions.

Later lectures begin with a two-minute "Quick start." It is a brief connection to the preceding class, not a graded quiz.

How your course grade is determined

Assessment	Weight	Main form of evidence
Term project	8%	Individual real-data analysis in Stata
Quizzes (4; lowest dropped)	12%	Concepts, calculations, interpretation
Midterm 1	25%	Chapters 1–7
Midterm 2	25%	Current assessment notice
Final examination	30%	Cumulative course evidence
Total	100%	

Assessments can include open-ended problems, short answers, and interpretation of Stata output. A non-programmable calculator is permitted when announced; phones, smart watches, and computers are not calculators.

Assessment dates and missed work

Record these dates

Quizzes: 9 Sep, 23 Sep, 26 Oct, 9 Nov
Midterm 1: 7 Oct
Term project: 9 Nov via iLearn
Midterm 2: 11 Nov
Final: as scheduled by AUS

If an assessment is missed

An approved midterm absence is handled through the Associate Dean's Office; otherwise the score is zero. The lowest quiz is dropped, so there is no makeup for one missed quiz. Late projects are not accepted and receive zero. Final-exam makeups follow AUS policy.

The syllabus and official iLearn announcements control if an administrative date changes.

Attendance, lateness, and devices

- Regular attendance and participation are expected because examples and Stata practice are part of the course evidence.
- Three occasions of lateness count as one absence.
- At 3 absences, a written warning or formal notification may be issued; at 5 absences, withdrawal may be initiated under AUS policy.
- If you arrive after roll call, tell me before leaving or the absence remains recorded.
- Electronic communication devices must be put away during examinations; possession during an examination is an academic-integrity violation.

Academic integrity and generative AI

Course rule

Generative-AI tools may not be used to produce assessed work unless I explicitly authorize that use for a particular task.

- Do not present AI-generated material as your own work.
- If a use is authorized, follow the stated limits, disclose and cite the tool, and take responsibility for accuracy.
- Unauthorized assistance, plagiarism, falsification, and prohibited devices are handled under the AUS Student Academic Integrity Code.

Check: When in doubt, ask before using the tool, not after submitting the work.

The course's empirical roadmap

Foundations

Probability and sampling → simple and multiple regression → statistical inference

Designs and outcomes

Panel data and fixed effects → binary outcomes → instrumental variables

Interpretation

Nonlinear models, logarithms, interactions, and careful distinction between association and causation

Application

Dedicated Stata sessions and an individual real-data term project

Your first economic question

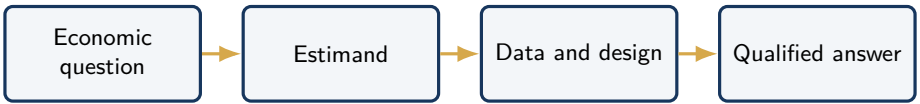
Start here – no prior econometrics is required

Choose an economic outcome you care about. Write one question that asks either:

1. what is happening,
2. what will happen next, or
3. what would happen if something changed.

Pair for 90 seconds: Compare questions. What data would begin to answer each one?

From a question to a credible claim



Intuition to keep

The design determines how strongly the final association can be interpreted.

Look at the pattern before the formula



Cross section	Time series	Panel
many units	one unit	many units
one date	many dates	many dates

First name the axes and the comparison. Then describe the pattern in ordinary language. Only after that should the class connect the picture to the equation.

The four questions that organize the book

A common problem

Econometric work begins with a concrete economic question, not with a preferred command.

What changes across the questions

Some questions ask for a causal effect, one asks whether observed decisions are consistent with discrimination, and one asks for a forecast.

The ideal experiment and the missing comparison

Causal language

To ask what smaller classes cause is to compare the same students under two class-size assignments.

Role of design

A randomized experiment creates comparable treatment groups by design.

A raw difference is evidence, but not yet an explanation

Mortgage example

In the Boston mortgage data used by the book, denial rates were about 28 percent for Black applicants and 9 percent for white applicants.

What remains unresolved

Applicants also differ in financial characteristics relevant to underwriting.

Data structure follows the economic question

Cross section

Many districts, workers, or applicants observed at one point in time are useful for comparing units, but those comparisons can reflect persistent differences among them.

Time series and panel data

A time series follows an aggregate through time; a panel follows many units through time.

Before you trust this result

- The unit of observation matches the question.
- The time period and population are explicit.
- The proposed comparison has a defensible counterfactual.
- Measurement units and missing values are documented.

Check: Correct arithmetic does not compensate for a comparison that misses the intended estimand.

Try it with a partner

1. Write one economic question in a single sentence.
2. Label it descriptive, predictive, or causal.
3. Name the outcome, treatment or predictor, unit, population, and data type.
4. State one threat to a credible answer.

What to take away

Substantive result

Separate descriptive, forecasting, and causal questions.

Method

Define the population, unit of observation, outcome, and explanatory variables.

Boundary

The equation or command is useful only when its symbols, units, conditioning set, and identifying assumptions have been made explicit.