

ECON 0019 QUANTITATIVE ECONOMICS AND
ECONOMETRICS

TENTATIVE SYLLABUS

Instructors:

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Aims: To provide students with a thorough understanding of core techniques of quantitative economics and econometrics and their application to test economic theories and measure magnitudes relevant for economic policy. The course serves as a foundation for subsequent study of quantitative topics. Term 2 expands on the topics learned on Term 1 for cross-sectional data and introduces basic concepts in time series models.

Objectives: At the end of the module, students should:

- Understand the main techniques of quantitative economics and econometrics, including their strengths and limitations.
- Understand how these techniques can be applied to test economic theories and measure economic magnitudes.
- Have some practical experience of the application of econometric methods using Stata.

Tentative assessment structure: There will be one final mark for the entire year. It will likely consist of the Empirical Project at the end of Term 2 (20%), and a Term 3 exam (80%).

Problem Sets: There will be three problem sets that do not carry weight for the final mark. Students must hand in all problem sets and there is no tolerance for late assignments. Problem sets are due before *your own* tutorial. For the weeks with no problem set due you will be given additional exercises which will be discussed in tutorials and should not be submitted. For the problems which require running some analyses on the computer, you are welcome to use any statistical software you like (in particular, Stata,

R, or Python). You are encouraged (but not required) to try different software on different weeks to learn more and make it fun.

Tutorials: There will be six tutorials to discuss the problem sets and exercises.

Quizzes: There will be weekly “check-your-understanding” quizzes. The quizzes are not graded but you are expected to take them before the lectures. Some questions will be discussed during the lecture.

Empirical Project: There will be an empirical project covering material from Terms 1 and 2 and it will likely correspond to 20% of the final marks in the module. The project will be a group assignment with 3 or 4 students per group. Details about the groups and project requirements will be provided on Week 25 (during the reading week), discussed in tutorials on Week 26. The empirical project is due at the end of Term 2 (exact date TBD).

Practical Sessions: There will be 6 sessions.

Textbooks: We will have two main textbooks. One is Wooldridge “Introductory Econometrics” (labeled W below), like in Term 1. The other is Stock and Watson “Introduction to Econometrics” (labeled SW). For some topics, they are largely substitutable; for others, they are complementary. Thus, in some cases the reading list below asks you to read either W or SW, while in other cases you should read both. Both textbooks are available online and linked on the Moodle page.

Tentative course plan:

Week 20:

- Lecture: Potential Outcomes and Experiments (W Ch.2-7a and 3-7e **plus** SW Ch.13.1-13.3)

Week 21:

- Lecture: IV (W Ch.15.1-15.6 or SW Ch.12)

Week 22:

- Lecture: IV and LATE (Same **plus** SW Ch13.6 and Appendix 13.2)

- Regular tutorials

Week 23:

- Lecture: Simultaneous Equations Models (W Ch.16.1-16.3)
- Practical Session 1
- Video-recorded tutorial

Week 24:

- Lecture: Limited Dependent Variables (W Ch.17.1 **plus** SW Ch.11)
- Practical Session 2
- Problem Set 1 due, discussed in tutorials

Week 25 (reading week):

- Empirical Project Assigned

Week 26:

- Lecture: Limited Dependent Variables (W Ch.17.2-17.5)
- Practical Session 3
- Regular tutorials. This tutorials will additionally include a discussion of the empirical project

Week 27:

- Lecture: Limited Dependent Variables (W Ch.17.2-17.5)
- Problem Set 2 due, discussed in regular tutorials

Week 28:

- Lecture: Regression with Time Series (W Ch.10, 11.1-3 or SW Ch.15, 16)
- Practical Session 4
- Video-recorded tutorial

Week 29:

- Lecture: Regression with Time Series (W Ch.10, 11.1-3 or SW Ch.15, 16)
- Regular tutorials

Week 30:

- Lecture: Serial Correlation and Heteroskedasticity (W Ch.12 or SW Ch.16)
- Practical Session 5
- Problem Set 3 due, discussed in regular tutorials
- Empirical Project Due at the end of Term 2