Outline

This graduate-level course will cover time series econometrics in a macroeconomic context. We
will cover the specification, estimation, and testing of core time series models, with emphasis
on both theory and application. Emphasis will be placed on understanding the models and
the estimation techniques such that the students will be able to apply the models to real-world
economic data. The primary textbook is Applied Econometric Time Series by Walter Enders (see
below). I will largely follow the outline of topics and material in this book but will also augment
material from other texts as needed.

Prerequisites

The university prerequisites are 440.602 (Macroeconomic Theory and Policy) and 440.606 (Econo-
metrics).

Textbook

Statistics), 4th edition. This course will largely follow this book (abbreviated as AETS) and
its topics, although we will not cover every subtopic.

Software

I will use mostly Eviews and Matlab but feel free to use any suitable statistical software. The
software should be able to estimate standard time series models (e.g., Eviews) and be able to
manipulate matrices, perform calculations, generate random numbers, maximize functions, and generate plots (e.g., Matlab).

**Grading Policy**

- **40%** will be based on weekly graded homework assignments. These assignments will typically contain a mixture of theory (e.g., questions and exercises from the textbook), application (e.g., interpret an estimated model as applied to data), and light statistical programming (e.g., program the log-likelihood function of a model and maximize it to get estimates). Assignments are due at the beginning of the lecture.

- **30%** will be based on an in-class midterm exam.

- **30%** will be based on an in-class final exam. The final will be comprehensive.

**Schedule**

The following is a tentative schedule of the topics, due dates, and classroom activities.

- **Week 1 (Aug 28).** Introduction to time series, review of statistical concepts, and start difference equations. Chapter 1 of AETS. **Distribute HW1.**

- **Week 2 (Sept 4).** Labor day (no class)

- **Week 3 (Sept 11).** Recap of previous material and finish difference equations. Chapter 1 of AETS. **Collect HW1 and distribute HW2.**

- **Week 4 (Sept 18).** Recap of previous material and start stationary models (ARMA). Chapter 2 of AETS. **Collect HW2 and distribute HW3.**

- **Week 5 (Sept 25).** Recap previous material and finish stationary models. Chapter 2 of AETS. **Collect HW3 and distribute HW4.**

- **Week 6 (Oct 2).** Recap previous material and start volatility models. Chapter 3 of AETS. **Collect HW4 and distribute HW5.**

- **Week 7 (Oct 9).** Recap previous material, finish volatility models, and review for midterm. Chapter 3 of AETS. **Collect HW5 and distribute HW6.**

- **Week 8 (Oct 16).** In-class midterm exam. **Collect HW6.**

- **Week 9 (Oct 23).** Start models with a trend. Chapter 4 of AETS. **Distribute HW7.**

- **Week 10 (Oct 30).** Recap previous material and finish models with a trend. Chapter 4 of AETS. **Collect HW7 and distribute HW8.**

- **Week 11 (Nov 6).** Recap previous material and start multiequation models. Chapter 5 of AETS. **Collect HW8 and distribute HW9.**

- **Week 12 (Nov 13).** Recap previous material and finish multiequation models. Chapter 5 of AETS. **Collect HW9 and distribute HW10.**
• Week 13 (Nov 20). Thanksgiving week (no class)

• Week 14 (Nov 27). Recap previous material and start cointegration and error correction models. Chapter 6 of AETS. Collect HW10 and distribute HW11.

• Week 15 (Dec 4). Recap previous material, finish cointegration and error correction models, cover selected topics, and review for the final. Chapter 6 of AETS and lecture material. Collect HW11 and distribute HW12.

• Week 16 (Dec 11): In-class final exam and last day of class. Collect HW12.

Course Policy

Please read the AAP code of conduct for academic misconduct and plagiarism at: