Econ 674, PhD Macroeconometrics

Helle Bunzel and Gray Calhoun

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OH	Tu 2 – 3:15	TBD	MW 2 – 3:30

Table 1: Instructor and TA contact information.

This is the syllabus for the first part of Econ 674, a macroeconometrics elective. If you have questions about the course material, the best times to address them are in the scheduled class meetings or during office hours. We can probably resolve questions or concerns about the course administration over email, but if you have urgent questions please stop by my office.

The required textbook for this class is Jim Hamilton's *Time Series Analysis*,[1] which is quite dated in some areas but is still reasonably comprehensive. Other recommended resources are

- Helmut Lütkepohl's *New Introduction to Multiple Time Series Analysis*,[2] which is an extremely thorough treatment of VARs and cointegration;
- Fabio Canova's *Methods for Applied Macroeconomic Research*,[3] focusing primarily on structural estimation;
- The lecture notes for Anna Mikusheva's time series class at MIT;[4]
- The NBER Summer Institute lectures given on time series by Jim Stock and Mark Watson.[5] (Videos and slides are available online.)

There are a few more papers listed on the syllabus and many more references on each topic will be given in the lectures. Additional material may be posted online as well, at

- «http://www.econ.iastate.edu/~gcalhoun/674», when Gray teaches;
- Blackboard Learn, «https://bb.its.iastate.edu», when Helle teaches.

You can use any software that you'd like for this class. Matlab is the standard software package in macroeconomics and you've already used R in the first-year econometric sequence, but I'd encourage you to try out Julia[6] — it's syntax is very similar to Matlab's, but the language is much better designed.[7] If you want to learn a more general-purpose programing language, Python is a good choice.[8] All of these languages are free and open-source (except Matlab) and have been designed for scientific and statistical computing. See the course webpage for links and additional details.

[1] James D. Hamilton. *Time Series Analysis*. Princeton University Press, 1994

[2] Helmut Lütkepohl. *New Introduction to Multiple Time Series Analysis*. Springer, 2006

[3] Fabio Canova. *Methods for Applied Macroeconomic Research*. Princeton University Press, 2007

[4] Anna Mikusheva. Lecture notes for time series analysis (MIT 14.384), 2013. Available at «http://ocw.mit.edu/courses/economics/14-384-time-series-analysis-fall-2013». Licensed under Creative Commons BY-NC-SA

[5] James Stock and Mark Watson. NBER Summer Institute Lectures: What's new in econometrics — time series. Video and slides available at «http://www.nber.org/minicourse_2008.html», July 2008

[6] Available at «http://julialang.org».

[7] The similarity of the syntax means that a lot of Matlab code will run almost unmodified.

[8] Python here means *SciPy*. See «http://scipy.org». And you should use Python 3 if you go this route, not Python 2. Version 3.5 is coming soon and will introduce native infix matrix operators, which will help a lot with code readability.

Lecture topic	Date	Background reading
Introduction	8/26	[LJ76] [Nob11] [Sim12]
Basic concepts in time series	8/28	[Ham94] Ch 3 & 4
Estimating ARMA models	9/02	[Ham94] Ch 5, 7 & 8
Structural VARs	9/04	[Ham94] Ch 10 & 11
Bayesian estimation of VARs	9/09	[Ham94] Ch 12
Partial identification and inference	9/11	[Kil13]
Part II (Helle Bunzel)	9/16 – 10/30	Heteroskedasticity, bootstrap, unit roots, and structural breaks
Part III (Gray Calhoun)	11/04 – 12/04	Cointegration, DSGE models, and forecasting as time permits

Assignments	
Paper proposal due	10/23
Oral exam	12/08 – 12/12
First draft of paper due	12/19
Final draft of paper due	1/30

Table 2: Lecture outline for the first part of the class; tentative topics to be covered later in the semester; and important deadlines.

Grading

Your grade will be determined by an oral exam and an original research paper — each count for half of the grade. The exam will be scheduled to take place during week 15 and will take each student about 20 minutes. Students will take the test individually. We will discuss specific details of this test in class and you will be given a list of topics to prepare before the Thanksgiving break.

For the paper, you will be required to submit a proposal and a first draft during the semester, and Helle and I will discuss your proposal with you after you submit it. Your course grade will be listed as “incomplete” until you turn in the paper, and the quality of the proposal and the first draft will factor into your grade on the paper.

License and copyright

University policies

The following policies apply to *every* course at Iowa State University. They are listed here for your convenience and reference.

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, «http://www.dso.iastate.edu/ja/academic/misconduct.html».

Disability accommodation

This material can be provided to you in alternative format. Anyone who anticipates difficulties with the content or format of the course due to a physical or learning disability should see me immediately in order to work out a plan. You may also want to contact the Disability Resources (DR) office, located on the main floor of the Student Services Building, Room 1076 or call them at 515-294-7220.

Dead week

For academic programs, the last week of classes is considered to be a normal week in the semester except that in developing their syllabi faculty shall consider the following guidelines:

- Mandatory final examinations in any course may not be given during Dead Week except for laboratory courses and for those classes meeting once a week only and for which there is no contact during the normal final exam week. Take home final exams and small quizzes are generally acceptable. (For example, quizzes worth no more than 10 percent of the final grade and/or that cover no more than one-fourth of assigned reading material in the course could be given.)
- Major course assignments should be assigned prior to Dead Week (major assignments include major research papers, projects, etc.). Any modifications to assignments should be made in a timely fashion to give students adequate time to complete the assignments.
- Major course assignments should be due no later than the Friday prior to Dead Week. Exceptions include class presentations by students, semester-long projects such as a design project in lieu of a final, and extensions of the deadline requested by students.

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 Assistance at 515-294-1020, or the Office of Equal Opportunity and Compliance at 515-294-7612.

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 Office or the Office of Equal Opportunity and Compliance.

Contact information

If you feel that any of your rights as a student have been violated, please email «academicissues@iastate.edu».

References

[Can07] Fabio Canova. *Methods for Applied Macroeconomic Research*. Princeton University Press, 2007.

[Ham94] James D. Hamilton. *Time Series Analysis*. Princeton University Press, 1994.

[Kil13] Lutz Kilian. Structural Vector Autoregressions. In Nigar Hashimzade and Michael A. Thornton, editors, *Handbook of Research Methods and Applications in Empirical Macroeconomics*, pages 515–554. Edward Elgar Publishing, 2013.

[LJ76] Robert E. Lucas Jr. Econometric policy evaluation: A critique. In *Carnegie-Rochester Conference Series on Public Policy*, volume 1, pages 19–46. Elsevier, 1976.

[Lüt06] Helmut Lütkepohl. *New Introduction to Multiple Time Series Analysis*. Springer, 2006.

[Mik13] Anna Mikusheva. Lecture notes for time series analysis (MIT 14.384), 2013. Available at «http://ocw.mit.edu/courses/economics/14-384-time-series-analysis-fall-2013». Licensed under Creative Commons BY-NC-SA.

[Nob11] Nobel Prize Committee. The prize in economic sciences 2011 — advanced information. *Nobelprize.org*, 2011. Available at «http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2011/advanced-economicsciences2011.pdf».

[Sim80] Christopher A. Sims. Macroeconomics and reality. *Econometrica*, 48(1):1–48, 1980.

[Sim12] Christopher A. Sims. Statistical modeling of monetary policy and its effects. *American Economic Review*, 102(4):1187–1205, June 2012.

[SW08] James Stock and Mark Watson. NBER Summer Institute Lectures: What's new in econometrics — time series. Video and slides available at «http://www.nber.org/minicourse_2008.html», July 2008.