ADVANCED MACROECONOMIC THEORY I

Econ 720-001 Fall 2023
The University of North Carolina at Chapel Hill

COURSE INFORMATION

Credit Hours: 3

Pre or Co-Requisites: ECON 700 or permission of instructor.

Target Audience: First year PhD students

Meeting Pattern: MW 8:40am-9:55am

Instructional Format: in-person

Classroom or Location: Gardner 209

INSTRUCTOR INFORMATION

Name: Lutz Hendricks

Email Address: lhendri@email.unc.edu

Office Location: Gardner 06C

Office Hours: MW, 12:30 to 1:30 pm

COURSE CONTENT

Course Description

Macroeconomic models and solution methods. Overlapping generations, growth models in discrete and continuous time, endogenous growth, stochastic growth, heterogeneous agents with incomplete markets.

Course Texts & Materials

Acemoglu, Introduction to Modern Economic Growth, MIT Press, ISBN-13: 978-0691132921

Course Goals & Student Learning Outcomes (SLOs)

Econ720 is the first course in the macro PhD sequence. Its objective is to learn about the standard models commonly used in macroeconomics. In parallel, the course develops the mathematical methods used to characterize the equilibria of the models.
This is a largely a theory and methods course. But we will cover some applications to topics such as the distribution of wealth. The course schedule contains more detail.

COURSE ASSIGNMENTS & ASSESSMENTS

Assignment Descriptions

Midterm exam

October 11, 2023. 40 percent of the course grade.

Final exam

Dec 15 from 4pm to 7pm. 50 percent of the course grade.

Problem sets

For due dates, see the class schedule. 10 percent of the course grade. Feel free to submit problem sets by email.

Grading Scale & Schema

Late Work

If a student misses a midterm, the weight of that midterm in the course grade will be added to the weight on the student's final. An exception will be made for University-approved absences. Students with this type of absence may request a make-up examination at a time convenient to both student and instructor.

POLICY STATEMENTS

Academic Policies

University Class Attendance Policy

University Policy: As stated in the University's Class Attendance Policy, no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities: University Approved Absence Office (UAAO) website provides information and FAQs for students and FAQs for faculty related to University Approved Absences
2. Disability/religious observance/pregnancy, as required by law and approved by Accessibility Resources and Service and/or the Equal Opportunity and Compliance Office (EOC)
3. Significant health condition and/or personal/family emergency as approved by the Office of the Dean of Students, Gender Violence Service Coordinators, and/or the Equal Opportunity and Compliance Office (EOC).

Instructors may work with students to meet attendance needs that do not fall within University approved absences. For situations when an absence is not University approved (e.g., a job interview, illness/ flu or club activity), instructors are encouraged to work directly with students to determine the best approach to missed classes and make-up assessment and assignments.

Honor Code Statement

All students are expected to follow the guidelines of the UNC Honor Code. In particular, students are expected to refrain from "lying, cheating, or stealing" in the academic context. If you are unsure about which actions violate the Honor Code, please see me, or consult studentconduct.unc.edu.

Syllabus Changes

The instructor reserves the right to make changes to the syllabus including project due dates and test dates. These changes will be announced as early as possible.

Acceptable Use Policy

By attending the University of North Carolina at Chapel Hill, you agree to abide by the University of North Carolina at Chapel Hill policies related to the acceptable use of IT systems and services. The Acceptable Use Policy (AUP) sets the

expectation that you will use the University's technology resources responsibly, consistent with the University's mission. In the context of a class, it's quite likely you will participate in online activities that could include personal information about you or your peers, and the AUP addresses your obligations to protect the privacy of class participants. In addition, the AUP addresses matters of others' intellectual property, including copyright. These are only a couple of typical examples, so you should consult the full Information Technology Acceptable Use Policy, which covers topics related to using digital resources, such as privacy, confidentiality, and intellectual property. Additionally, consult the Safe Computing at UNC website for information about data security policies, updates, and tips on keeping your identity, information, and devices safe.

Data Security & Privacy

UNC-Chapel Hill Privacy Statement: Sakai's Discussion Forum, Assignments, DropBox, Gradebook, and Tests & Quizzes tools are designed to share FERPA-protected information privately between instructors and individual students.

Grade Appeal Process

If you have any concerns with grading and/or feel you have been awarded an incorrect grade, please discuss it with me as soon as possible. If we cannot resolve the issue, you may talk to our director of undergraduate studies or department chair.

Services & Student Support Policies

Accessibility Resources & Services (ARS)

Accessibility Resources and Service (ARS – ars@unc.edu) receives requests for accommodations, and through the Student and Applicant Accommodations Policy determines eligibility and identifies reasonable accommodations for students with disabilities and/or chronic medical conditions to mitigate or remove the barriers experienced in accessing University courses, programs and activities. ARS also offers its Testing Center resources to students and instructors to facilitate the implementation of testing accommodations. Faculty and instructors with any concerns or questions about accommodations and/or their implementation, are invited to reach out to ARS to discuss.

Counseling & Psychological Services (CAPS)

UNC-Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The Heels Care Network website is a place to access the many mental health resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to their website https://caps.unc.edu/ or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance.

Title IX Resources

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made online to the EOC at https://eoc.unc.edu/report-an-incident/ or by contacting the University's Title IX Coordinator (Elizabeth Hall, titleixcoordinator@unc.edu) or the Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu). Confidential resources include Counseling and Psychological Services and the Gender Violence Services Coordinators (gvsc@unc.edu). Additional resources are available at safe.unc.edu.

Policy on Non-Discrimination

The University is committed to providing an inclusive and welcoming environment for all members of our community and to ensuring that educational and employment decisions are based on individuals' abilities and qualifications. Consistent with this principle and applicable laws, the University's Policy Statement on Non-Discrimination offers access to its educational programs and activities as well as employment terms and conditions without respect to race, color, gender, national origin, age, religion, genetic information, disability, veteran's status, sexual orientation, gender identity or gender expression. Such a policy ensures that only relevant factors are considered, and that equitable and consistent standards of conduct and performance are applied. If you are experiencing harassment or discrimination, you can seek assistance and file a report through the Report and Response Coordinators (email

reportandresponse@unc.edu or see additional contact info at safe.unc.edu) or the Equal Opportunity and Compliance Office at https://eoc.unc.edu/report-an-incident/.

Diversity Statement

I value the perspectives of individuals from all backgrounds reflecting the diversity of our students. I broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. I strive to make this classroom an inclusive space for all students. Please let me know if there is anything I can do to improve. I appreciate any suggestions.

Undergraduate Testing Center

The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit http://testingcenter.web.unc.edu/.

Learning Center

Want to get the most out of this course or others this semester? Visit UNC's Learning Center at http://learningcenter.unc.edu to make an appointment or register for an event. Their free, popular programs will help you optimize your academic performance. Try academic coaching, peer tutoring, STEM support, ADHD/LD services, workshops and study camps, or review tips and tools available on the website.

Writing Center

For free feedback on any course writing projects, check out UNC's Writing Center. Writing Center coaches can assist with any writing project, including multimedia projects and application essays, at any stage of the writing process. You don't even need a draft to come visit. To schedule a 45-minute appointment, review quick tips, or request written feedback online, visit http://writingcenter.unc.edu.

Course Schedule

- Aug–21 (Mon): Modern macro, Here we talk about methods: how to set up a general equilibrium model and characterize its equilibrium.
- Aug–23 (Wed): Sequential trading and Arrow-Debreu

Overlapping Generations

- Aug–28 (Mon): Model
- Aug–30 (Wed): OLG model (continued)
- Sep–4 (Mon): Labor day
- Sep–6 (Wed): Dynamics and steady state, PS1, due TBA
- Sep–11 (Mon): Efficiency and Social Security
- Sep–13 (Wed): Bequests
- Sep–18 (Mon): Money as a bubble, PS2, due TBA

Infinite Horizon, Discrete Time Models

- Sep–20 (Wed): The growth model
- Sep–25 (Mon): Wellness day
- Sep–27 (Wed): Dynamic programming. For your reference: Dynamic programming theorems, Notes on Dynamic Programming
- Oct–2 (Mon): Competitive equilibrium, PS3, due TBA
- Oct–4 (Wed): Cash in advance models, PS4, due TBA
- Oct–9 (Mon): Example: Asset pricing, RQ
- Oct–11 (Wed): Midterm exam

Infinite Horizon, Continuous Time Models

- Oct–16 (Mon): Solow model
- Oct–18 (Wed): Optimal control
- Oct–23 (Mon): Optimal control (contd.)
- Oct–25 (Wed): The growth model
- Oct–30 (Mon): The growth model (contd.)
- Nov–1 (Wed): Competitive equilibrium, Dynamics and phase diagrams (*partially* skipped this year)
- Nov–6 (Mon): Money in the utility function, PS5, due TBA
- Nov–8 (Wed): Perpetual youth, Aggregation issues (skipped this year)

Endogenous Growth

- Nov–13 (Mon): Endogenous growth: AK model, Increasing varieties, RQ
- Nov–15 (Wed): Increasing varieties, part II
- Nov–20 (Mon): Knowledge spillovers and scale effects, PS6, due TBA
- Nov–22 (Wed): Thanksgiving
- Nov–27 (Mon): Quality ladders, Quality ladders with firm dynamics

Stochastic Growth

- Nov–29 (Wed): Stochastic optimization, Dynamic programming – we will not talk about this in class. Think of it as a simple user guide to the results that are out there.
- Dec–4 (Mon): Asset pricing, Extensions, RQ
- Dec–6 (Wed): Stochastic growth model, RQ

Heterogeneous Agents

- Dec–6 (Wed): To be added if time permits.