

Econ 581: Advanced Macroeconomics

Class: Sec 001 MW 2:00-3:15pm, 127 MARB

Instructor: Christian vom Lehn

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Office hours: T 4:00-5:00pm, Th 4:00-5:00pm, F 3:30-4:30pm, or by appt.

LEARNING OUTCOMES AND COURSE VISION

*“Teach ye diligently... that you may be instructed more perfectly... in all things that pertain to the kingdom of God, that are expedient for you to understand; Of things both in heaven and in the earth, and under the earth; things which have been, things which are, things which must shortly come to pass; **things which are at home, things which are abroad; the wars and perplexities of the nations...**” (D+C 88:78-80, emphasis added)*

*“And verily, I say unto you, that it is my will that you should... obtain **a knowledge of history, and of countries, and of kingdoms, of laws of God and man, and all this for the salvation of Zion...**” (D+C 93:53, emphasis added)*

The learning outcomes for this course are as follows:

- Acquire a toolset for analyzing modern macroeconomics models.
- Demonstrate an understanding of basic dynamic stochastic general equilibrium (DSGE) macroeconomic modeling.
- Use MATLAB, a software package widely used in macroeconomic model solving and simulation.
- Demonstrate an understanding of current issues being addressed in macroeconomics research.
- Be prepared to perform well in the macroeconomics classes in PhD programs in economics.

PREREQUISITES

Econ 381, Econ 382, Econ 388

TEXTS

None! We will use lecture notes that I have synthesized from various textbooks and lecture notes used at different PhD programs throughout the country. These can be found on Learning Suite. If you are itching to get your hands on textbooks that will go beyond what we do in class and may be used in graduate coursework, I would recommend starting with these three books: (1) Nancy Stokey, Robert Lucas, and Edward Prescott, *Recursive Methods in Economic Dynamics*; (2) Lars Ljungqvist and Thomas Sargent, *Recursive Macroeconomic Theory*, 4th edition; (3) Daron Acemoglu, *Introduction to Modern Economic Growth*.

GRADES

Grades will be based on the five categories listed below with the corresponding weights.

| Item | Pct. % |
|-------------------|--------|
| Final Exam | 25% |
| Midterm | 25% |
| Homework | 25% |
| Slides Project | 20% |
| Course Engagement | 5% |

- **Midterm:** The midterm exam will cover content from the first half of the course. The test is *timed* and will be administered in the Testing Center. You will only have three hours to complete the test.
- **Final Exam:** The final exam will be comprehensive. Plan on taking the exam at the scheduled time, listed on the calendar at the end of this document.
- **Homework:** I will assign 10 problem sets and I will drop the lowest score among all submitted problem sets with a good-faith completion effort (exceptions to the “good-faith” completion effort in extenuating circumstances can be discussed). Each student must turn in their own problem set in their own handwriting/coding, but you may work together in groups on the homework. Homework assignments are due at the beginning of class (see calendar at the end). Late homework will not be graded. Although group work is permitted, I will penalize any reported free riding. Anyone who is confirmed to have simply copied work from a classmate will lose credit on that assignment and the previous three assignments.
- **Slides Project:** For this project, you must work in a group of 2-3 students (which you select). You will be reading a recent research paper in macroeconomics and preparing presentation slides for a short presentation (<30 minutes). However, you will only present for 5+ minutes on the last day of class; the core of this assignment is to read the paper and create the slides evidencing some understanding of the content of the paper. More details about how to complete this project, including the list of papers to choose from, are available on Learning Suite (under the Assignments tab). You will need to list your top preferences for which paper you would like to work on and who is in the group you will work with as part of what you submit for Problem Set 5. All submissions are due by 11:59pm on the last day of classes, December 8. Grading is mostly based on completion, but also on the accuracy and clarity of your slides.
- **Course Engagement:** As part of your grade, I expect you to engage with me and your fellow classmates both inside and outside of class. The primary purpose of this component of your grade is to give you an incentive to get the most out of this class. There is not a strict formula for how to obtain these points, but completing the following actions will guarantee full credit:

- Complete the beginning of class survey (link available on Learning Suite)
- Attend all classes, be prepared for each class and participate (see below for details)
- Complete all course assignments.
- Complete a midcourse evaluation (sent by e-mail) and final student ratings for the course.
- Come visit me during office hours at some point in the semester (this can be satisfied as part of the slides project assignment)

Other activities you can engage in that will contribute to your course engagement grade include: working together with other students on problem sets, meaningful participation in class discussion beyond pre-class assignments, asking questions outside of class above and beyond what is covered in class, and attending visiting scholar seminars in the economics department.

NOTE: Since this class is designed to prepare you for graduate school, I would strongly encourage you to attend visiting scholar seminars in the economics department. Further, I would encourage you to consider attending the faculty seminar (Friday morning) instead of the student seminar (Thursday 11am). If you would like to attend the faculty seminar, please talk to me in advance to let me know you'll be attending. Also, you are welcome to attend faculty research presentations, which take place on some Thursdays at 11am. I will announce these in class, but like the Friday morning seminars, you should talk to me before attending.

- **NOTE - Class Participation and Preparation:** For each class, there will be a pre-assignment, expected to take ten minutes or less. In class, I will randomly call on individuals with questions about the pre-assignment. You have two “free passes” a semester, where if drawn, you can say “pass” and I will randomly select someone else. Beyond this, there will be opportunities to voluntarily participate in the course of lecture each class.
- **NOTE - Final Grades:** Given the nature of and audience for this course, the average final grade in the course will be higher than in most economics courses you have taken thus far; it is unexpected that any of you will score below a C in the class (though exceptions exist), and most grades will be significantly higher than that. However, it will still require substantial effort to obtain a good grade in the class.

TENTATIVE COURSE OUTLINE

| Date | Day | Topic | Notes | HW Due |
|------------------|-------------|---|---------|--------|
| Aug 29 | M | Introduction, Macro Theory and Macro Evidence | Ch. 1 | |
| Aug 31 | W | Solow Growth Model p. 1 | Ch. 2 | |
| Sep 7 | W | Solow Growth Model p. 2 | Ch. 2 | PS 1 |
| Sep 12 | M | Neoclassical Growth Model p. 1 | Ch. 3 | |
| Sep 14 | W | Neoclassical Growth Model p. 2 | Ch. 3 | |
| Sep 19 | M | Neoclassical Growth Model p. 3 | Ch. 3 | PS 2 |
| Sep 21 | W | Dynamic Programming p. 1 | Ch. 4 | |
| Sep 26 | M | Dynamic Programming p. 2 | Ch. 4 | |
| Sep 28 | W | Dynamig Programming p. 3/Continuous Time Modeling p. 1 | Ch. 4/5 | PS 3 |
| Oct 3 | M | Continuous Time Modeling p. 2 | Ch. 5 | |
| Oct 5 | W | Continuous Time Modeling p. 3 | Ch. 5 | |
| Oct 10 | M | Explaining Growth, p.1 | Ch. 6 | PS 4 |
| Oct 12 | W | Explaining Growth, p.2 | Ch. 6 | |
| Oct 17 | M | Explaining Growth, p.3 | Ch. 6 | |
| Oct 19 | W | Catch up and exam review | | PS 5 |
| Oct 24 | M | Competitive Equilibrium in the Neoclassical Growth Model p. 1 | Ch. 7 | |
| Oct 25–27 | T–Th | Midterm 1 | | |
| Oct 26 | W | Competitive Equilibrium in the Neoclassical Growth Model p. 2 | Ch. 7 | |
| Oct 31 | M | Competitive Equilibrium in the Neoclassical Growth Model p. 3 | Ch. 7 | PS 6 |
| Nov 2 | W | Competitive Equilibrium in the Neoclassical Growth Model p. 4 | Ch. 7 | |
| Nov 7 | M | Risk and Uncertainty p. 1 | Ch. 8 | PS 7 |
| Nov 9 | W | Risk and Uncertainty p. 2 | Ch. 8 | |
| Nov 14 | M | Stochastic Growth Model p. 1 | Ch. 9 | |
| Nov 16 | W | Stochastic Growth Model p. 2 | Ch. 9 | PS 8 |
| Nov 21 | M | Heterogeneity and Incomplete Markets | Ch. 10 | |
| Nov 28 | M | Optimal Taxation and Overlapping Generations | Ch. 11 | |
| Nov 30 | W | Labor Search, NK Models, Firm Dynamics | Ch. 11 | PS 9 |
| Dec 5 | M | Catch up and exam review | | |
| Dec 7 | W | Slide Presentations | | PS 10 |
| | | <i>Exam preparation day, Dec 9</i> | | |
| Dec 14 | W | Final Exam, 127 MARB, 2:30pm | | |

PLEASE READ THE FOLLOWING STATEMENTS FROM BYU

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and every instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

In the College of Family, Home, and Social Sciences, our classroom participation and behavior are guided by our mission statement, the BYU honor code, and principles of Christian discipleship. It is imperative that we value and respect every person as a child of Heavenly Parents who has divine worth. Consequently, we need to take steps to listen to, learn from, and love one another by striving to consider thoughtfully the opinions of others and use language that is polite, considerate, and courteous even when we strongly disagree. It is essential to create an educational environment that ensures "the gift of personal dignity for every child of God." This includes embracing one another compassionately and "eliminat[ing] any prejudice, including racism, sexism, and nationalism... regardless of age, personal circumstances, gender, sexual orientation, or other unique challenges." It is vital to delight in individuality and welcome diverse perspectives and experiences as we "work tirelessly to build bridges of understanding rather than creating walls of segregation." To accomplish these goals we seek unity in higher principles of equity, charity, collaboration, and inclusiveness in order to build an environment in which all students, faculty, and staff can participate in, contribute to, and benefit equally from the academic community.

Brigham Young University prohibits all forms of sexual harassment—including sexual assault, dating violence, domestic violence, and stalking on the basis of sex—by its personnel and students and in all its education programs or activities. University policy requires all faculty members to promptly report incidents of sexual harassment that come to their attention in any way and encourages reports by students who experience or become aware of sexual harassment. Incidents should be reported to the Title IX Coordinator at t9coordinator@byu.edu or (801) 422-8692 or 1085 WSC. Reports may also be submitted online at <https://titleix.byu.edu/report> or 1-888-238-1062 (24-hours a day). BYU offers a number of resources and services for those affected by sexual harassment, including the university's confidential Sexual Assault Survivor Advocate. Additional information about sexual harassment, the university's Sexual Harassment Policy, reporting requirements, and resources can be found in the University Catalog, by visiting <http://titleix.byu.edu>, or by contacting the university's Title IX Coordinator.

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. A disability is a physical or mental impairment that substantially limits one or more major life activities. Whether an impairment is

substantially limiting depends on its nature and severity, its duration or expected duration, and its permanent or expected permanent or long-term impact. Examples include vision or hearing impairments, physical disabilities, chronic illnesses, emotional disorders (e.g., depression, anxiety), learning disorders, and attention disorders (e.g., ADHD). If you have a disability which impairs your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 801-422-2767 to request a reasonable accommodation. The UAC can also assess students for learning, attention, and emotional concerns. If you feel you have been unlawfully discriminated against on the basis of disability, please contact the Equal Opportunity Office at 801-422-5895, eo_manager@byu.edu, or visit <https://hrs.byu.edu/equal-opportunity> for help.