Course outline for

ADVANCED MACROECONOMIC ANALYSIS

ECON 4020

Department of Economics, York University

Winter 2025

Continuously updated

For latest version go here

Nippe Lagerlöf

February 3, 2025

Instructor: Nils-Petter (Nippe) Lagerlöf

Email: lagerlof@yorku.ca (indicate 4020 in subject line). See further tips on communicating with me below.

Office: It used to be Vari Hall 1056 but it's still packed up after some major repairs.

Office hours: You should always make use of TA's office hours (posted below) before seeing me. That said, I will try to be in my office 5-6pm on Mondays before class, but the easiest way to reach me is rather by email (lagerlof@yorku.ca). I often reply relatively quickly if the questions are short and clearly formulated, but not always, and in particular not to repetitive or rude emails. It is important that you provide your name and SID number. The relevant course code (in this case Econ 4020) should appear in the subject line of the email. I rarely reply if this information is missing.

My policy has always been to discuss marking and grading only in writing, if at all.

Teaching Assistant: Elaheh Zarabi. Email: elizrb72@yorku.ca

TA's office hours: Wednesdays 1:30-3:30pm in Vari Hall 1057, plus extra office hours on Zoom on February 7, March 14, and March 28, 2-4pm

Zoom link (copy and paste into browser if it doesn't work):

https://yorku.zoom.us/j/92600323956?pwd=6iRMz3sv0JEHitPHtaliRL4ldsMxg4.1

Meeting ID: 926 0032 3956.

Passcode: 321999.

SNACK help: You can try to make use of the SNACK drop-in sessions, especially for understanding mathematical steps in solutions to problems. There is no specific tutor assigned to this course, but many of them know enough math to be able to explain specific steps or operations when shown a problem with a proposed solution. For more details, follow this link: https://www.yorku.ca/laps/snack/.

Website for this course: http://www.nippelagerlof.com/teaching/4020/4020.htm

Links to my other courses: www.nippelagerlof.com/teaching/teaching.htm

Format for lectures: The course is scheduled to be in person, at the time I write this.

Lecture hours: Mondays 7-10pm

Late enrollment: I never sign any papers to let students enroll late, or give any approval to that effect in any other form.

General course description: This course is meant to be an introduction to what used to be called *modern* macro, which roughly means macro with lots of micro in it (so-called *micro foundations*). Topics-wise, the material here is similar to what you may have seen in other undergraduate macro courses, but (depending on what other courses you have taken) it might be more technical, involve more equations, more of solving utility maximization problems, etc. Modern macro also uses a lot of *dynamic* models, meaning they have many time periods (more than two, usually infinitely many). This is not a course in everyone's taste; if you do not like math, and find it hard in the beginning already, you should drop it right away (it only gets harder later on). This course is meant to be a preparation for students who want to pursue graduate studies in economics at decently well-ranked North American schools.

Math preparation: I recommend that you try to solve the practice problems posted on the course website (http://www.nippelagerlof.com/teaching/4020/Some_math_problems_January_2025_post.pdf); those are designed to test you on a couple of math concepts that students often do not know well, or misinterpret, when they start this course. Another way to start preparing is to do old multiple-choice exams from Econ 1530, as I taught it in 2005. These are posted here: http://www.nippelagerlof.com/teaching/1530/1530.htm

Textbook materials: First, there is a digital booklet with excerpts from Advanced Macroeconomics by David Romer, prepared by the publisher. These are some very narrow sections of the book, but we'll go through those in detail. Second, there will be some lecture notes and other material posted on the course website.

How to buy the digital booklet: I think it used to be available through e-Class, but I am not sure if it will be this term. Instead, I think you are supposed to go to the York University Bookstore (www.bookstore.yorku.ca) and search under "AP-ECON ECON4020 M (Winter - Keele)." Hopefully, it is self-explanatory from there. When I browse the posted price is $12.95.

You should also be able to buy it from McGraw-Hill directly. To do that, go to https://www.mheducation.com/highered/custom. Change the country to Canada, search under Nippe, and the link should show up. Just follow the prompts from there. It is listed for US$13.14 when I search.

Matlab: This semester we will not use Matlab, since the course is planned to be in

person. So you can skip all the Matlab related segments in the lecture notes (see below).

Exams: There are three midterm tests, all held in class and in person. Preliminary exam dates are posted below, with reservation for possible changes.

The reason I insist on holding exams in person is because of *academic integrity*, i.e., it provides me with ways to learn who actually writes the exam.

Note also that there is no final exam in this course. Therefore, concepts like "deferred standing" have little meaning in this course, as explained further below.

Grading scheme: Let your mark on the first midterm be M_1, the mark on the second be M_2, and the mark on the third be M_3. All these (M_1, M_2 and M_3) are numbers between 0 and 1 (i.e., they lie on the interval $[0, 1]$). The overall mark (which can be labelled the "numerical grade") is denoted W, and is determined by this function:

$$W = 0.3M_1 + 0.5M_2 + 0.2M_3.$$

Then the (letter) grade, denoted G, is determined by the following function:

$$G = \begin{cases} \text{A+} & \text{if } W \geq 0.95 \\ \text{A} & \text{if } W \in [0.85, 0.95) \\ \text{B+} & \text{if } W \in [0.75, 0.85) \\ \text{B} & \text{if } W \in [0.7, 0.75) \\ \text{C+} & \text{if } W \in [0.65, 0.7) \\ \text{C} & \text{if } W \in [0.55, 0.65) \\ \text{D+} & \text{if } W \in [0.5, 0.55) \\ \text{D} & \text{if } W \in [0.45, 0.5) \\ \text{E} & \text{if } W \in [0.4, 0.45) \\ \text{F} & \text{if } W < 0.4 \end{cases}$$

Some remarks to note:

- York University has a so-called "20% rule" about "exams given during the final 14 calendar days of classes in a term", which is why the last midterm carries the weight it carries.

- Students who miss or do poorly on the first midterm should be aware that this is costly, since I am reluctant to deviate from the above grading scheme by shifting "weight" to

the other midterms. I suggest that students who are absent from, or do poorly on, the first midterm, and have expectations about a top grade, simply drop the course.

- Exams in this course cannot be "deferred." The Registrar's Office has stated in writing that: "When students do not or cannot write a mid-term examination (not held during the formal examination period), alternate arrangements to write the mid-term examination should be made within the duration of the course by the course director and individual student *at the discretion of the course director. The Deferred Standing Agreement does not apply.*"(Italics added.)[1]

- The second and third midterm exams cover all material taught in the course up until then (i.e., not only what has been taught since the most recent midterm).

Assignments: There will be no formal assignments to hand in, but we will do problems from the book and/or from old exams in class. You should make sure you at least *try* to solve them: it's valuable training.

Dates for the midterm exams: The *tentative* dates for the midterm exams are as follows:

- Monday February 10, 2025.

- Monday March 17, 2025.

- Monday March 31, 2025. (This should be the last day of class. If not, then I will change.)

Material covered:

- The first midterm will cover Ch. 1 of Romer's textbook (except the parts that we skip; see below), and the following from the lecture notes: the introduction (Section 1) except Section 1.4, and the Solow model (Section 2.1). However, we skip the Matlab parts of the lecture notes.

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[1]This message was once posted here (link no longer working): http://www.registrar.yorku.ca/exams/deferred/index.htm

- The second midterm will cover Ch. 2-3 of Romer's textbook (except the parts that we skip; see below), and the following from the lecture notes: the Ramsey model (Section 2.2), and endogenous growth (Section 2.3), and Growth Accounting (Section 3). However, we skip the Matlab parts of the lecture notes. The second midterm also covers everything that was covered on the first midterm.

- The third midterm will cover Ch. 11 of Romer's textbook, but only some parts (see below), and Sections 1.4 and 4 of the lecture notes. The third midterm also covers everything that was covered on the first and second midterms.

Some **old exams** are downloadable from the course website.

Time plan and course description: The tentative plan is as follows. The first part of the course deals with some mathematical and micro theoretical foundations (see lecture notes on course website), and the Solow growth model. The second part deals with the Ramsey model and endogenous growth. The last part deals with labor markets (specifically the Shapiro-Stiglitz model). This plan might change a little as we move along.

Sections of the textbook covered (referring to 5th edition):

For Ch. 1-3, we skip the following parts of the textbook (i.e., cover all except):
In Ch. 1: Sections 1.6 and 1.8, and Section 1.7 from "Convergence" (but we will cover the "Growth Accounting" segment of Section 1.7).
In Ch. 2: All of Part B, and Sections 2.4-2.7 of Part A, except that we cover (do not skip) the very beginning of Section 2.6, pp. 67-69, on shocks to ρ in the Ramsey model (Section 2.6, up until, but not including the segment titled "The Rate of Adjustment...").
In Ch. 3: Sections 3.4 to 3.7, and the whole of Part B (Sections 3.8-12)

For the rest of the book we cover the following parts of the textbook (i.e., do not skip):
In Ch. 11: The introduction just before Section 11.1. Then we cover Section 11.2 (the Shapiro-Stiglitz model) in some detail. You can browse Section 11.1 as well, but do not read that in detail.

List of problems to look at:

might be updated

First set of problems:

End-of-chapter problems:

1.2

1.5

1.9 (a) and (b)

Other problems:

Problem 1 from Econ 5011 Midterm Exam 2005 (about time paths in Solow model). See

www.nippelagerlof.com/teaching/5011/5011.htm

Second set of problems:

End-of-chapter problems:

2.6 (a) to (c); try (d) and (e)

(Skip 3.5)

Other problems

Go to the link "Problems" on the Econ 5110 web site. Do Problem 4 under the heading
"Practice problems for midterm 1" (about the Ramsey model). See www.nippelagerlof.
com/teaching/5110/5110.htm

Problem 3 from Midterm March 18, 2019, v2 (endogenous growth)

Third set of problems:

End-of-chapter problems:

11.3

Other problems:

Problem 2 from Final Exam December 2009 (Ramsey)

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Other things:

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Tips on communicating by e-mail

Below are some tips on how to translate mathematical expressions into text that you can write in the body of a standard e-mail.

Math	Text
x^a	x^{a}
x_a	x_{a}
$\frac{a}{b}$	a/b
$\frac{a+b}{c+d}$	(a+b)/(c+d)
α	alpha
β	beta
γ	gamma
$\sum_{i=a}^{b} x_i$	sum from i=a to i=b of x_{i}
$\int_{i=a}^{b} x_i$	integral from i=a to i=b of x_{i}

You can also find out what Greek letters (others than those listed above) are called by going to http://en.wikipedia.org/wiki/Greek_alphabet

Note on academic integrity: York University publishes information online about the consequences of cheating and such. See here: https://www.yorku.ca/unit/vpacad/academic-integrity/students/; and here: https://www.yorku.ca/secretariat/policies/policies/academic-conduct-policy-and-procedures/

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