

Selected Topics in Economic Theory

Behavioral Macro-Finance ECO 6900-A00 (9341)

Prof. Isabelle L. SALLE

Winter 2023

Class schedule	We 11:30AM - 2:20PM
Place	In-person: 100 Louis Pasteur (CRX) C410
Office hours	Upon appointment only, <i>via</i> Zoom or in person (Office FSS-9029)
Contact	isalle@uottawa.ca

1 Overview of the course

1.1 Background

The leading paradigm in (macro)economics and finance assumes that economic agents (households, firms, investors) are perfectly rational in forming their expectations and making their decisions. Experimental and empirical observations indicate that this assumption is often too demanding. This course focuses on the analysis of macroeconomic and financial models under ‘bounded’ rationality, where agents do not behave under full information and rational expectations but rather learn from their environment and adapt their behaviors to its changing conditions.

1.2 Official course description

The course discusses **theoretical models** and their **empirical applications** in the field of behavioral macroeconomics. The course covers major developments in the modeling of learning and expectation formation and combines the insights of these models with empirical evidence from lab experiments, micro data and macro and financial time series.

1.3 General course objectives

Students will get acquainted with:

- the major **theories of behaviors and expectations** in the academic literature when agents are not assumed to be perfectly rational – *inter alia*, adaptive learning, heterogeneous-expectation models, genetic-algorithm-based evolutionary models, replicator dynamics, sample autocorrelation learning, experience-based learning and diagnostic expectations.
- **analytical tools** and **mathematical concepts**, such as **bifurcations** and **complex and chaotic dynamics**, that are useful to describe the aggregate dynamics in economic and financial systems when expectations are boundedly rational.
- the major related **concepts** of animal spirits, boom-and-bust cycles, bubbles and crashes, coordination issues, higher-order beliefs, complex systems and agent-based models.
- the empirical **observation techniques** to confront the theoretical models studied in the course with the actual behaviors of macro-financial systems and economic agents, in particular **macro laboratory experiments** and **large-scale-survey experiments**.

2 Course organization

The course is a combination of formal **lectures** on the models and methods, both from the lecturer and guest speakers from the Bank of Canada, and a ‘**reading group**’ where leading

academic contributions are presented by the students and discussed in class.

Jan 11	General introduction to the course One-dimensional maps and the Cobweb model
Jan 18	Two-dimensional maps and the asset-pricing model
Jan 25	Adaptive learning in macroeconomic models
Feb 8	Social learning about monetary policy
Feb 1st	Learning and monetary policy recommendations
Feb 15	Experimental Macroeconomics
March 1st	Papers 1 & 2
March 8	Papers 3 & 4
March 15	Guest lecture by Dr. Tolga Ozden (Model development team, Bank of Canada) DSGE models with heterogeneous expectations
March 22	Papers 5 & 6
March 29	Guest lecture by Dr. Yinxi Xie: (Model development team, Bank of Canada) DSGE models with boundedly rational agents
April 5	Guest lecture by Dr. Yang Zhang (Director of the Model development team, Bank of Canada) an Agent-Based Model of the Canadian Economy
April 12	Q& A and broader discussion (<i>via zoom</i>)

3 Course material

The slides of the lectures will be available on BS after each lecture. All papers referred to during the lectures or part of the reading group are available in the library with an uOttawa

account.

3.1 List of academic papers for students' presentations

1. George-Marios Angeletos, Zhen Huo & Karthik A. Sastry (2021) Imperfect Macroeconomic Expectations: Evidence and Theory, *NBER Macroeconomics Annual* 35: 1-86

<https://www.journals.uchicago.edu/doi/full/10.1086/712313>

2. Pedro Bordalo, Nicola Gennaioli and Andrei Shleifer (2018), Diagnostic Expectations and Credit Cycles, *The Journal of Finance*, 73:199-227

<https://doi.org/10.1111/jofi.12586>

3. Xavier Gabaix (2020) A Behavioral New Keynesian Model, *American Economic Review*, 110 (8):2271-2327,

https://scholar.harvard.edu/files/xgabaix/files/behavioral_new_keynesian_model.pdf

4. Joep Lustenhouwer & Cars Hommes (2019) Inflation targeting and liquidity traps under endogenous credibility, *Journal of Monetary Economics*, 107:48-62,

<https://www.sciencedirect.com/science/article/abs/pii/S0304393219300>

5. Klaus Adam & Albert Marcet (2011), Internal rationality, imperfect market knowledge and asset prices, *Journal of Economic Theory*, 146:1224-1252.

6. Adriana Cornea-Madeira, Cars Hommes & Domenico Massaro (2019) Behavioral Heterogeneity in U.S. Inflation Dynamics, *Journal of Business & Economic Statistics*, 37(2): 288-300,

<https://www.tandfonline.com/doi/abs/10.1080/07350015.2017.1321548>

3.2 Additional resources

The following references are useful resources:

- C.H. Hommes, *Behavioral Rationality and Heterogeneous Expectations in Complex Economic Systems*, Cambridge University Press, 2013, http://www.cambridge.org/gb/knowledge/isbn/item6945169/?site_locale=en_GB.
- P. De Grauwe, *Lectures on Behavioral Macroeconomics*, Princeton University Press, 2012, <http://press.princeton.edu/titles/9891.html>

4 Assessment methods

Attendance and Time Commitment Students should expect to spend a **minimum of six hours per week outside** of the classroom engaged in activities related to the course, e.g. homework, reading, studying, preparing presentation, etc. Alongside the standard three hours of in-class instruction, they should then expect a minimum time commitment of nine hours per week per course (on average). This estimate is based on the assumption that the students attend all the classes, which is strongly encouraged for the lectures, and mandatory for the presentations and guest lectures. Failure to attend the regular lectures, while not resulting directly on a negative shock on the grade (unless the students miss their presentation), will entail a significantly larger workload overall to pass the course.

Evaluation format	Weight	Date
Class presentations	30%	Throughout the course (by March 22nd)
Three reports on guest lectures	$10 \times 3 = 30\%$	Throughout the course
Term paper	40%	By April 17, 2023

Presentation Students will have to present a paper from the list above. Class presentations are part of the **Experiential Learning (EL) activities** of the course.

During the first three weeks, if the number of enrolled students is sufficient, the students have to form groups of two, and rank the papers from the list above by decreasing order of preferences. **The choices should be communicated to the lecturer during the next lecture.** The lecturer will try to match the papers according to the announced preferences. **The deadline to submit preferences and group composition is Jan 25rd, 2023.** Failures to coordinate on a group or to submit a preference list will result in an arbitrary allocation of group members and paper.

The composition of the groups, papers and presentation dates will be announced by Jan 27, 2023. All presentations take place after the reading week.

The presentation will have a seminar format of a minimum **45 minutes**. An in-depth presentation of the motivations of the paper and a detailed account of the model are expected. Clarity of the exposition and understanding of the model mechanisms, as well as ability to situate the paper within the context of the course, will count towards the grade. **All members of the group are expected to take part to the presentation.**

The rest of the lecture session consists in a class discussion.

Reports on guest lectures For each guest lecture, attendance is mandatory because students have to write a **single-page report** that summarizes the main points of the lecture, the specificity of the models presented with respect to the rational-expectation benchmark and the main results that the bounded rationality approach brings in. The reports are due **within seven calendar days** of the guest lecture. It is recommended to work on the report immediately after the lecture, while it is still fresh one's memory.

Term paper The term paper consists in an up-to-three-page research proposal (excluding references) within the context of the course. It can be, but is not limited to, an experimental design or a model extension. Relevance, clarity of exposition, fit within the related literature and feasibility will count towards the grade.

Late assignment All assignments are to be submitted by their due date and time.

All late submissions will be immediately docked 5%, with an additional 5% for each sub-

sequent day late to a maximum of 3 days, including weekends. After 3 days all outstanding assignments will be given a zero (0%) grade.

Exceptions are made only for illness or other serious situations deemed as such by the instructor. University regulations require all absences from exams and all late submissions due to illness to be supported by a medical certificate. Absence for any other serious reason must be justified in writing, to the professor, within five business days following the date of the exam or submission of an assignment.

The Faculty reserves the right to accept or refuse the reason; reasons such as travel, jobs, or any misreading of the examination timetable are not acceptable.

Missed exams and requests for deferral An absence from an evaluation that is not excused will result in a mark of 0. According to Academic Regulation I-9.5, students can request to be excused from only one evaluation per course. An absence will be excused only in the case of illness or other serious situations. The Faculty reserves the right to accept or refuse the reason. Conflicts due to travel, jobs, or any misreading of the examination timetable are not acceptable reasons.

Students who wish to be excused for an absence must complete a deferral form and submit credible external documentation (e.g. medical certificate, police report, death certificate, etc.) within five working days of the evaluation. Students whose request is approved will be required to take a deferred evaluation (**no reweighting scheme is available in that class**). A deferred evaluation must be taken as soon as possible after the original date, but in any case no later than (6) months after the end of the term (Academic Regulation I-9.5). For the final exam, the date of the deferral is [May 12 or 13: still to be determined].

Students should reflect deeply before requesting a deferred evaluation, since **they can only receive one deferral per course**. Students who are struggling to keep up with their schedule may find it worthwhile to withdraw from the course and take it again at a later date. In Winter 2023, the deadline to withdraw from a course (without financial reimbursement) is **March 31**. For further information, consult the link <https://www.uottawa.ca/course-enrolment/withdrawing-from-a-course>.

Exam conflicts Any conflict with a presentation schedule should be reported to the Professor at the beginning of the term.

Any conflict with a final exam schedule should be reported to the Faculty's undergraduate office as soon as the final examination schedule is released.

Guidelines on recording Class Sessions

Classes may be recorded if required to meet an approved academic accommodation plan for one or more students. Access to recordings for those students will only be available through Brightspace and will be removed after 150 days. Recordings are the intellectual property of the professor and are protected by copyright. Students authorized to receive recordings are not permitted to share or download them, and they will lose the right to their accommodation if they do.

Notice - Collection of Personal Information with Class Recordings

In accordance with the Ontario Freedom of Information and Protection of Privacy Act and with University Policy 90, your personal information is collected under the authority of the University of Ottawa Act, 1965. Classes will only be recorded for purposes consistent with the fulfillment of the course learning activities and outcomes. The recording may include the use of your video presence, picture, and voice, depending upon the technology used. You may ask your instructor to inform you of the specifics of the technology. If you choose not to have your video presence, picture or voice recorded, you may disable the audio and video functionality or request accommodation from your instructor. The recording will be available only to authorized individuals through University of Ottawa systems. If you have questions about the collection, use and disclosure of your personal information in this notice, please contact your instructor.

THE FOLLOWING PAGES PROVIDE ADDITIONAL INFORMATION ON DEPARTMENT, FACULTY AND UNIVERSITY POLICIES AND RESOURCES AND SHOULD BE READ CAREFULLY.

Exam conflicts

- Any conflict with a midterm exam schedule should be reported to the Professor at the beginning of the term. This request is especially applicable to the type 3 conflict (two in-class exams back-to-back) for students with special learning needs.
- Any conflict with a final exam schedule should be reported to the Faculty's undergraduate office as soon as the final examination schedule is released.

Policy on the EIN grade (incomplete):

In all economics courses, students who fail to complete work (either a single piece of work or a combination of work) worth a total of 25% or more of the final grade will receive a grade of EIN in the course. The EIN grade is equivalent to a failure mark (F). See Regulation 10.6 (<https://www.uottawa.ca/administration-and-governance/academic-regulation-10-grading-system>) for details. Please note that a denied request for a deferral may therefore lead to a failure mark.

Regulation on Academic Fraud

Preamble

Academic integrity is a fundamental value at the core of all academic activities. [The regulation on academic fraud](#) defines the acts that can compromise academic integrity and outlines the various sanctions and consequences of such acts, and the procedures for handling allegations and setting sanctions. Further information on academic integrity is available on the [website of the Provost and Vice-President, Academic Affairs](#).

Definition

1. Any act by a student that may result in a distorted academic evaluation for that student or another student. Academic fraud includes but is not limited to activities such as:
 1. plagiarising or cheating in any way;
 2. submitting work not partially or fully the student's own, excluding properly cited quotations and references. Such work includes assignments, essays, tests, exams, research reports and theses, regardless of whether the work is in written, oral or any other form;
 3. presenting research data that are forged, falsified or fabricated in any manner.
 4. attributing a statement of fact or reference to a fabricated source;
 5. submitting the same work or a significant part of the same piece of work in more than one course, or a thesis or any other piece of work submitted elsewhere without the prior approval of the appropriate professors or academic units;
 6. falsifying or misrepresenting an academic evaluation, using a forged or altered supporting document or facilitating the use of such a document;
 7. taking any action aimed at falsifying an academic evaluation.

Sanctions

1. Students who commit or attempt to commit academic fraud, or who are a party to academic fraud, are subject to one or more sanctions ([full list](#)), such as:
 1. a written warning;
 2. zero for part of the work in question;
 3. zero for the work in question;
 4. zero for the work in question and the loss of additional marks for the course in question;
 5. zero for the work in question, with a final grade no higher than the passing grade for the course in question;
 6. an F or NS grade for the course in question.

University Policies

Intellectual property right of course content

The materials you receive for this course are protected by [copyright](#) and must be used for this course only. You do not have permission to disseminate these materials, regardless of the means of dissemination including the uploading of these materials to any website or mobile application. These materials include but are not limited to, any course notes provided by the professor, their Powerpoint presentations, and any lecture recordings you may have.

If you require clarification, please consult your professor.

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Regulation on Bilingualism at the University of Ottawa

Every student has the right to require that a course be given in the language used to describe the course in the course calendar ([Academic Regulation I-2](#)).

Except in programs and courses for which language is a requirement, all students have the right to produce their written work and to answer examination questions in the official language of their choice, regardless of the course's language of instruction.

[Prevention of Sexual Violence](#)

If you feel unsafe, call 9-1-1 or reach out to Campus Protective Services at 613-562-5411.

The University of Ottawa has a zero-tolerance policy for any sexual act or act targeting a person's sexuality, gender identity or gender expression. This includes both physical and psychological acts that are committed, threatened, or attempted against a person without the person's consent, such as sexual assault, sexual harassment, stalking, indecent exposure, voyeurism, sexual exploitation, and cyberbullying. The University, as well as various employee and student groups, offers a variety of services and resources to ensure that all uOttawa community members have access to confidential support and information, and to procedures for reporting an incident or filing a complaint.

Collection of Personal Information with Adobe Connect/Zoom/MS Teams Recordings

In accordance with the *Freedom of Information and Protection of Privacy Act* in Ontario and with University [Policy 90](#), your personal information is collected under the authority of the *University of Ottawa Act*, 1965.

The Adobe Connect/Zoom/MS Teams sessions will be recorded for purposes consistent with the fulfillment of the course learning activities and outcomes. The recording may include the use of your video presence, picture, and voice. If you choose not to have your picture or voice recorded, you may disable the audio and video functionality or request accommodation from your instructor. The recording will be available only to authorized individuals through University of Ottawa systems.

If you have questions about the collection, use and disclosure of your personal information in this notice, please contact isalle@uottawa.ca

STUDENT EXPERIENCE RESOURCES:

Faculty Student Experience Centre

The goal of the [Student Experience Centre](#) is to help students with their academic and social well-being during their time at the University of Ottawa. Regardless of where a student stands academically, or how far along they are in completing their degree, the Student Experience Centre is there to help students continue on their path to success.

A student may choose to visit the [Student Experience Centre](#) for very different reasons. Younger students may wish to talk to their older peers to gain insight into programs and services offered by the University, while older student may simply want to brush up on study and time management skills or learn about programs and services for students nearing the end of their degree.

In all, the [Student Experience Centre](#) offers a place for students to talk about concerns and problems that they might have in any facet of their lives. While students are able to voice their concerns and problems without fear of judgment, mentors can garner further insight in issues unique to students and find a more practical solution to better improve the services that the Faculty of Social Sciences offers, as well as the services offered by the University of Ottawa.

Academic GPS

The *Academic GPS* hub is a one-stop shop for academic support. Whether you're an experienced student or just starting out, you'll find some great resources to help you succeed.

With the Academic GPS, you can:

- chat with a mentor seven days a week
- register for study groups
- take part in study methods workshops (note taking, time management, exam preparation, stress management, Academic Integrity Session, etc.)
- book an appointment with a mentor

Health and Wellness

Your wellness is an integral part of your success. If you don't feel well, it can be hard to focus on your studies. Dedicated professionals and fellow students who care about you are always ready to provide advice and support. Depending on your needs, many activities and services exist to accompany you during your academic journey.

Services include:

- opportunities to connect;
- counselling sessions
- peer support;
- physical activity;
- wellness activities and workshops;
- spiritual guidance.

If you want to connect with a counsellor, you can book an appointment online or go to their walk-in clinic at 100 Marie-Curie, fourth floor.

You can also drop-in to our wellness space, chat online with a peer helper, or access 24/7 professional help through the website.

Academic accommodations

The [Access Service](#) tries to make sure all students with disabilities have equal access to learning and research environments, the physical campus and University-related programs and activities. The Academic Accommodations service works with other campus services to create an accessible campus learning environment, where students with disabilities have an equal opportunity to flourish.

We offer a wide range of services and resources, provided with expertise, professionalism and confidentiality.

Some services we offer

- Help for students with disabilities in making the transition
- Permanent and temporary accommodation measures
- Learning strategy development
- Adaptive exams
- Transcriptions of learning material
- Interpretation (ASL and LSQ)
- Assistive technologies

If you think that you might need any of our services or supports, [email the Academic Accommodations service \(adapt@uOttawa.ca\)](mailto:adapt@uOttawa.ca).

Human Rights Office

The mandate of the [Human Rights Office](#) is to provide leadership in the creation, implementation and evaluation of policies, procedures and practices on diversity, inclusion, equity, accessibility and the prevention of harassment and discrimination.

Contact information: 1 Stewart St. (Main Floor – Room 121) - Tel.: 613-562-5222 / Email: respect@uOttawa.ca

Career Services

[Career Services](#) offers various services and a career development program to enable you to recognize and enhance the employability skills you need in today's world of work.