

# Economics 4340/7340

## Introduction to Game Theory

Fall 2016

Syllabus

For a pdf version of this syllabus (perhaps a more readable printout), [click here](#).

***Calculus and Econ 4351 are absolute prerequisites for this course.***

Mondays & Wednesdays, 12:30-1:45 pm, Switzler 01

Professor: Ron Harstad, [ron.harstad@gmx.us](mailto:ron.harstad@gmx.us), 227 Professional Bldg, 882-3299, prefer email to phone (voicemails are only sent to me by email anyhow, and then less reliably). My pawprint email does not reach me reliably.

Course webpages: on Sakai, [sakai.missouri.edu](http://sakai.missouri.edu).

*Initial points of contact:* For questions about course content, the Q & A forum at the Discussion Board of our Sakai site. For questions about common problems and solutions, the FAQ forum at the Discussion Board of our Sakai site. (If you get a reply to an email which simply says "qa," that means we believe the answer will be useful to others, so it is being posted on the Q & A forum. A "QA!" reply means it is already there; you should have looked there first. Similarly, a reply which says "faq" means the question is being answered on the FAQ forum; "FAQ!" means it has been answered there earlier.)

Required Text: Ken Binmore, *Playing for Real*, Oxford University Press, 2007. You probably should have this book with you whenever you will be standing in long lines, maybe even on your bedstand at night. Years ago, American Express described this book in a heavily advertised slogan. I advise against renting this book; the vast bulk of students do not wish to relinquish it after the course is over.

- This book has been ordered through the MU Bookstore. Possibly better options:
- [Google](#)
- [Amazon](#)
  - Oxford Press has recently added a new offering, a Coursepack, related to this book. I have not had a chance to see it, but have been reliably told that some of the more advanced material in the 2007 text has been removed from the coursepack. That advanced material has not been removed from coverage on the final exam.
  - There is an unusually high probability that you will decide at the end of the semester that you want to keep this book on your bookshelf, which might affect where you obtain it.

Course Description: we will examine the rigorous theory of strategic interaction of

rational individuals.

Course Schedule: Posted on Sakai under Course Information; check regularly for updates, as the schedule may change. It is each student's responsibility to be familiar with the last day to drop a course without a grade, and the last day to drop a course.

Students are asked to bring a smartphone, tablet or laptop to each class; we cannot predict which classes you might be asked to use them.

Grades: Your grade will be determined by the temperature on a corresponding day in October (1st if your last name begins with A, up through 26th for last names beginning with Z). Any complaints and we will switch to December. A more serious answer uses the following information:

Elements of grading (400 point basis):

- Midterm (see schedule webpage): 100 points, curved score enters semester gradebook
- Cumulative final (see schedule webpage): 200 points, curved score enters semester gradebook
- Better curved score: 50 points ( =  $\max\{\text{curved midterm}/2, \text{curved final}/4\}$  )
- Contributions: Questions and comments, in-class and on Sakai, that are useful to the other students: 50 points needed for basis

Scale: Minimum total for semester grade:

A	A-	B+	B	B-	C+	C	C-	D+	D
360	348	332	320	308	292	280	268	252	240

Notes: [1] **You must pass the final exam (at least 120 out of 200 curved score) to pass the course.** [2] The quality of your language is expected to fit an advanced undergraduate course, whether on a test, on Sakai, or in class. Points cannot be expected on an exam unless the handwriting is legible without the aid of a magnifying glass. [3] Contributions may not be evaluated more than once (at the end of the semester). Credit for in-class contributions depends on your making sure I learn your name. I expect that Sakai postings will earn at least 2.5 points (though ad hominem, attacking, or disruptive postings and in-class comments may lose points), useful Sakai replies more, and the best in-class and Sakai contributions may earn 25 points. [4] Each student is endowed with 5 points of contributions at the beginning of the semester. [5] Several Sakai postings within a few minutes may not count much more than one. [6] There is no limit to the amount of contributions points a student can receive.

Questions on Grading: an agreed-to request to re-evaluate raw scores assigned on an exam will always be treated as a review of the entire exam, not just a question which the student felt was underscored. My experience in past years has been that errors in grading found that were favorable to the student at least sizably reduce the errors found that work against her/him, and sometimes result in a lower total raw score.

Graduate Credit: Additional work is required to receive graduate credit for this class. If you are taking this course for graduate credit (as Economics 7340), please see me to make arrangements.

*Final:* **Monday, December 12, 7:30-9:30 am.** The official time. Midterm as on Schedule page on Sakai.

Course timing: In modern parlance, the course will be partly "flipped." That is, where I believe I can anticipate many questions in the course of material that may best fit a lecture style, and where resources permit, I will provide the lecture as a digital video, and expect the same attention to it as if it had been presented in class. These videos will be linked to on Sakai, and the visuals presented in them will also be posted there. The goals are to present material in class more suited to discussion than to lecture, to get further in the course materials during the semester, and to use more class time for working through problems. It is anticipated that some classes may have to be taught remotely.

Exam coverage: questions on exams may relate to material presented in the book, to material presented in class, to material presented in course videos and that presented on Sakai, whether posted by the instructor, a TA, or a student. It is expected that this relation may be sufficiently subtle that some students will complain that they had never seen the material asked about; such complaints reflect more on the student than on the exam or its preparers. Any question for which it is believed that a better answer likely shows better understanding of game theory or better preparation to use game theory later in life, business or schooling, will be considered as a possible appropriate question to ask.

*Communication to you:* I will assume that an announcement posted on Sakai by 9 pm Sunday will be read by you before class on Monday, and by 9 pm Tuesday will be read before class on Wed. When turnaround time is shorter, or email more convenient, I will assume that an email sent to your official MU email address by 9:00 am the day of class will be read before class (use only your official MU email address to send email to me; I cannot legally assume I know the identity of anyone sending me email via a gmail or similar account). DoIT used to have a webpage telling you how to forward your official MU email automatically to another email address of your choosing (hotmail, e.g.) if you check that other email more often. In an example of their efforts to provide services, they have deleted that webpage; you're on your own for this. A number of students are unable to receive these messages because they fail to delete old messages from their student mailbox and so they exceed their storage quota and no new messages can be received. Please be sure to not only delete old messages frequently but to empty out the *Deleted Messages* folder as well. It takes both of these delete attempts to completely free up the memory space in your account and prevent it from exceeding the quota.

*Expectations:* You are not high-school students, and we will not treat you as if you were. Nor should you act as if your role is simply to take notes and regurgitate them on exams. We will not take attendance, but you are expected to have a near-perfect

attendance record, for the simple reason that you have an incentive: several hours of independent work are required to learn as much as paying close attention in one class. You are expected to keep up with the material, for two simple, related reasons: the course builds, at each step relying on you not just having been exposed to the previous material, but being familiar with it; almost no one does well on course exams if much of what they know was crammed into their head the night before. We will not assign homework, but you are expected to do homework, both exercises at ends of chapters (unless you are already a master at the particular subject matter, and understand where it fits in the overall course), and other example games that you or your classmates find. You are expected to put forward a legitimate effort to learn game theory, and in the process, to create and participate in an environment that helps your classmates to learn. You are encouraged to find other readings relevant to the course, and to share what you learn from these and where you found them with your classmates. In summary, this course offers you a unique opportunity to learn useful skills and ways of thinking; if at your level of maturity that doesn't motivate you, taking attendance and requiring homework wouldn't make much difference.

If you miss a lecture for any reason, it is your responsibility to obtain notes, assignments, etc. from your classmates. Do not contact me with questions regarding a missed lecture until you have had a chance to read the relevant chapter and go over class notes from at least one other student.

Importance of course: Learning to think like a game theorist changes your life. Game theory shows up everywhere, and this sort of thinking can help in more places than you can imagine. Learning game theory is far more important than getting a good grade in this course. Nonetheless, this subject matter is so useful in higher-level and graduate coursework in economics, business, law or public policy; in business, and in life, that working hard in this course pays off more than most advanced courses on campus.

### *How to Do Well In This Course:*

1. In many ways, this is a course about a way of thinking about events, constraints, incentives, and outcomes, rather than some pre-set body of material to commit to study. The exam material is based on the book as well as on the lecture material, so attending lectures as well as reading all assigned text chapters is critical to doing well in the course. Many students learn best by reading the relevant material in the book ahead of the class. If after paying close attention in class, and going over the relevant part of the book, you still are not on top of the material, formulate your questions and post them in the Q&A forum on Sakai. If you can help a fellow student by answering a question posted on Sakai, do so. Do not wait until right before the exam or until the end of the semester for help, since this material builds on the earlier material and you will fall behind in the course if you do not keep up on nearly a day-to-day basis. Falling behind is usually fatal.
2. We will make efforts to provide on Sakai every graph or diagram presented in class. Thus, don't get caught up in class trying to get a graph or diagram into your notes: why we are showing it is more important than what is on the graph; the lead-up to showing and the followup after showing it are keys to understanding.
3. Attend all lectures and participate on Sakai frequently. Paying close attention at lectures is a more efficient use of an hour devoted to the course material than merely reading the book.

4. Economics is not the kind of subject matter best learned alone. There is a big difference between having been *exposed* to concepts, and to the relationships among them, and being *familiar* with them. Familiarity is what makes for better exam performance, far superior learning retention, and thus better use of game-theoretic thinking in later courses and in future economic decisions. I strongly recommend that you find a study partner, preferably someone else in 4340. The key part of studying together is to have one of you explain some concept, and have the other one point out errors, as well as very imprecise language, or missing logical linkages in the explanations. Before you lose a friend, switch roles and have the other one do the explaining. An hour a week of this kind of back-and-forth interchange is more effective than 3 hours a week studying on your own.

**IN CASE OF EMERGENCY, MILITARY CALL-UPS, YOUR or YOUR CHILD'S EXTREME SICKNESS, OR DEATH IN THE FAMILY AFFECTING ATTENDANCE THE DAY OF AN EXAM YOU WILL BE EXCUSED FROM THE EXAM OR THE QUIZ WITH THIS PROPER PROCEDURE.**

- You **MUST** provide me with your justification via e-mail and you **MUST** submit proper documentation to me in a timely manner (e.g., military order in advance, doctor's note or more likely hospital records upon your return; with advance notice, we can probably arrange to give you and proctor your exam in the ICU).
- When a death in your immediate family prevents your taking the exam with the class, you need to send me a statement, via e-mail, as soon as you know you must miss the exam, telling the deceased's name & the relationship to you and provide me with a copy of the obituary upon your return.
- The normal result of missing the final exam will be getting an "Incomplete" grade for the course, and having to make arrangements after grades for other students have been submitted; no more prompt arrangements can be promised or considered ordinary. It is ordinarily the case that the same exam questions will not be re-used for a makeup exam and you should assume that the inability to compare answers on a makeup exam with other students' answers is at least as likely to be a disadvantage as an advantage.

**RECORDING RESTRICTIONS** (in accord with UM Executive Order 38)

Students may only make audio or video recordings of any in-class activity after they have received my email acknowledgment of their email request to do so. The email requesting to make recordings must specifically state the occasions when recording will be done, the device and software used to do so, and the intended purpose of the recording. Requests so made, if digital media are used, will not normally be refused. Any recordings which can be posted on the course website must be posted if the instructor so requests. Policies stated in class are understood not to take precedence over this syllabus. In any issue of import to your learning or performance in this class, you and I will take the presumption that any posted recording might have been edited.

To foster a safe environment for learning, however, the redistribution of audio or video recordings of statements or comments from the course to individuals who are not students in the course is prohibited without the express permission of the faculty member and of any students who are recorded. While Executive Order 38 is not explicit on this issue, it is the instructor's opinion that posting recordings on our Sakai website does not constitute such prohibited redistribution.

Unauthorized distribution of such materials is a violation of academic standards and may violate copyright laws and/or privacy rights. Students found to have violated this policy are subject to discipline in accordance with the provisions of Section 200.020 of the Collected Rules and Regulations of the University of Missouri pertaining to student conduct matters. Faculty and staff found to have violated this policy are subject to discipline in accordance with applicable University policies.

#### **ACADEMIC INTEGRITY POLICY**

Academic honesty is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructor. (Cf. <http://www.missouri.edu/~mbook/mbook.pdf>.)

Academic Dishonesty includes but is not necessarily limited to the following:

- A. Cheating or knowingly assisting another student in committing an act of cheating or other academic dishonesty.
- B. Plagiarism which includes but is not necessarily limited to submitting examinations, themes, reports, drawings, laboratory notes, or other material as one's own work when such work has been prepared by another person or copied from another person.
- C. Unauthorized possession of examinations or reserve library materials, or laboratory materials or experiments, or any other similar actions.
- D. Unauthorized changing of grades or markings on an examination or in an instructor's grade book or such change of any grade report.

**ACADEMIC INTEGRITY PLEDGE:** "I strive to uphold the University values of respect, responsibility, discovery, and excellence. On my honor, I pledge that I have neither given nor received unauthorized assistance on this work." Students are expected to adhere to this pledge on all graded work whether or not they are explicitly asked in advance to do so. The University has specific academic dishonesty administrative procedures. Although policy states that cases of academic dishonesty must be reported to the Office of the Provost for possible action, the instructor may assign a failing grade for the assignment or a failing grade for the course, or may adjust the grade as deemed appropriate. The instructor also may require the student to repeat the assignment or to perform additional assignments. In instances where academic integrity is in question, faculty, staff and students should refer to Article VI of the Faculty Handbook. Article VI is also available in the M-Book. Article VI provides further information regarding the process by which violations are handled and sets forth a standard of excellence in our community.

#### **ADA STATEMENT (FROM OFFICE OF THE PROVOST)**

If you need accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class, or at my office. To request academic accommodations (for example, a note taker or extended time on exams), students must also register with the Office of Disability Services (<http://disabilityservices.missouri.edu>), S5 Memorial Union, 882-4696. It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements. Another resource, MU's Adaptive Computing Technology Center, 884-2828, is available to provide computing assistance to students with disabilities. For other MU resources for students with disabilities, click on "Disability Resources" on the MU homepage.

#### **THE DEPARTMENT OF ECONOMICS EXAM ACCOMMODATION PROCEDURE FOR STUDENTS WITH DISABILITIES:**

1. A disabled student who wants accommodations for an exam in Economics course must present the course instructor with a Letter of Accommodation from the Office of Disability Services (ODS) that documents the accommodations the student is entitled to receive. This should be done as early in the semester as possible.
2. For each accommodated exam, the student should bring the course instructor an Adaptive Examination Request Form from ODS. The course instructor is not required to accept such a request unless the student has first provided him with a Letter of Accommodation. ODS policies require that this form be provided to him at least 7 business days in advance for hourly examinations and by Thanksgiving Break (Spring Break) for fall (spring) final examinations.
3. The student section of the form must be properly filled out (including consistency with the Letter of Accommodation regarding the accommodations) and signed by the student. The course instructor must fill out the instructor portion including a note in the SPECIAL INSTRUCTIONS box and sign the form.
4. The white and pink copies of the form are given back to the student and the student must submit the white copy to ODS.

#### **INTELLECTUAL PLURALISM STATEMENT (FROM OFFICE OF THE PROVOST)**

The University community welcomes intellectual diversity and respects student rights. Students who have questions concerning the quality of instruction in this class may address concerns to either the Departmental Chair or Divisional

leader or Director of the Office of Students Rights and Responsibilities (<http://osrr.missouri.edu/>). All students will have the opportunity to submit an anonymous evaluation of the instructor(s) at the end of the course.

#### UNIVERSITY OF MISSOURI-COLUMBIA NOTICE OF NONDISCRIMINATION

The University of Missouri System is an Equal Opportunity/ Affirmative Action institution and is nondiscriminatory relative to race, religion, color, national origin, sex, sexual orientation, age, disability or status as a Vietnam-era veteran. Any person having inquiries concerning the University of Missouri-Columbia's compliance with implementing Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Americans With Disabilities Act of 1990, or other civil rights laws should contact the Assistant Vice Chancellor, Human Resource Services, University of Missouri-Columbia, 130 Heinkel Building, Columbia, Mo. 65211, (573) 882-4256, or the Assistant Secretary for Civil Rights, U.S. Department of Education.

#### GRIEVANCE POLICY

Information concerning student grade appeal procedures and non-academic grievances and appeals may be found in the Student Handbook.

Office hrs: Mondays, 3:30-4:15 or by appointment. My policy is not to reveal any aspect of course material or exam coverage in my office only to the student(s) present. I can, for example, go over a draft answer to a question that a student has prepared. If asked during office hours how I would answer a question, be it from the text, a study guide, a website, newspaper or other source, I expect I will go on Sakai and type in the question and my answer there. If asked during office hours a question about what coverage of material is relevant to questions on an upcoming exam, I expect I will go on Sakai and type in the question and my answer there. In this way, all students will have access to it. I will make reasonable attempts to schedule appointments when my office hours are not mutually convenient. There will be times during the semester when I cannot make my usual office hours, and when email, phone or Skype are the only substitutes. Note that knowing my office hours will be a suggestion that you have read the syllabus all the way through to the end.