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Stanford University
Department of Economics
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Econ 51: Economic Analysis II

Instructor:

Professor Florian Scheuer, scheuer@stanford.edu, Office Hours: Monday and Tuesday, 11am-12pm in ECON 341

Teaching assistants:

Troy Smith (Head TA), tdsmith6@stanford.edu, Sections: Thursday, 5:15-6:05 in ECON 139 and 6:15-7:05pm in ECON 140, Office Hours: Thursday 9am-11pm in ECON 218

Egemen Eren, eren@stanford.edu, Sections: Friday, 10-10:50 in ECON 140 and 11-11:50am in ECON 218, Office Hours: Wednesday 4-6pm in ECON 140

Adrian Poon, adrianpn@stanford.edu, Sections: Friday, 12:15-1:05 in ECON 139 and 1:15-2:05pm in ECON 218, Office Hours: Thursday 3:15-5:15pm in 160-127

Iiro Makinen, makinen@stanford.edu, Office Hours: Tuesday 3:10-5:10pm in 160-127

Course description: This course will explore selected topics in microeconomic analysis. These will include decisions under uncertainty, general equilibrium, game theory, and theories of asymmetric information. The theories we will discuss provide the foundation of almost all fields in modern economics, and are therefore essential for almost all upper division courses in economics.

The basic question we are trying to answer in this class is: What happens when economic agents (individuals, firms etc.) interact, either in markets or through other institutions? As we will see, the answer to this question depends crucially on what we assume about the form of interaction.

This course (as well as almost all modern economics) heavily relies on mathematics, will require much work, and many of you may not find it easy. The recommended strategy is to study continuously, use the problem sets to make sure you keep up with the material, and contact the TAs at the first sign of trouble. There is also a tutoring service provided by the “Center for teaching and learning” (CTL) at Stanford, which you might find useful (the website is <http://ctl.stanford.edu/>).

Economics department common course policies: All courses taught at the Stanford Department of Economics are governed by a common set of course management rules. A document explaining these rules is on the Economics Department website at <http://economics/undergraduate/economics-common-syllabus>. Please be sure to read this document in its entirety and, if you have any questions, send an email to both me and

Joanne DeMarchena (jdemar@stanford.edu), the undergraduate administrator at the economics department. Note that it is your responsibility to get familiar with these policies, and failure to do so does not constitute grounds for exceptions from these policies.

Prerequisites: Econ 50 must be completed before you enroll in Econ 51 (*Axess* will not allow you to enroll otherwise). There are no exceptions for these prerequisites (in particular, you cannot take Econ 50 and 51 concurrently). For more information on prerequisites, please contact the undergraduate administrator Joanne DeMarchena (jdemar@stanford.edu).

Since this is a class about microeconomics, it will heavily rely on concepts introduced in Econ 50. If you have taken Econ 50 a long time ago, it may be useful to refresh your memory with its material, using any of the textbooks listed below. In addition to Econ 50, you should be familiar with multivariate calculus and basic probability theory. In particular, you should be able to take derivatives, know some constrained maximization (e.g. be able to solve $\max(\log(x) + \log(y))$ s.t. $x+y=t$), and be able to solve simple non-linear equations. If you do not have a firm mathematical background, this class will be *very* difficult for you.

Class and Exam Schedule: The class meets on Monday and Wednesday, 9:00-10:50am, room Herrin T175. I will start at 9:05pm sharp, and there will sometimes be a five-minute break in the middle of the class. Regular lectures will take place through Wednesday, May 28. In addition, we will hold a review class on Monday, June 2. There will be no class on Wednesday, June 4 (dead week) in order to give you time to prepare for the final exam.

Sections will be held on Fridays of each week, starting on April 11. Sections will be used to expand on ideas presented in lectures and to discuss assigned and graded problem sets and exams. We will make frequent use of our coursework website, so please register and choose a section at <http://coursework.stanford.edu> as soon as possible (note: TA office hours, session rooms and time slots have not been assigned yet. I will let you know immediately when they are assigned by the department). If you want to change sections after you already chose one, please contact the Head TA (Troy Smith).

Please turn off your cell phones and other electronic devices that make sound during the lectures and TA sections. Devices such as laptops are allowed (I understand that some of you may need them for note-taking and other purposes), but please make sure that it does not cause noise.

There will be one midterm exam during class on **Monday, May 5 (at the class location, room Herrin T175)**. The final exam will be on **Monday, June 9, 8:30-11:30am (room 320-105)**. **There will be no make-up exams, and no early or late sittings for exams.** In the past, some students asked for make-up exams because of various reasons such as job interviews, family issues, travel plans etc. Even though I completely sympathize with

most of these reasons, it is not possible to grant such accommodations under the department rules, and students who miss an exam will obtain a score of zero.

Problem sets: Problem sets constitute a major part of the course grade, and an even larger part of your learning. No amount of lecturing and explanations in the class and sections can replace the process of learning by doing, i.e. understanding, internalizing and applying the ideas, that you must go through yourself. It will therefore be hard, and sometimes impossible, to fully grasp the material covered in the lectures without solving the problem sets. They are designed to be challenging, so some parts of them will be more difficult than the level of knowledge required for the midterm or final. Thus, not being able to solve all problem sets in full does not necessarily mean that you cannot do well in the exams. The main benefit of hard exercises is that they make you think and go back to your class notes many times, so along the way your understanding will improve and solving similar problems will become easier over time. I strongly recommend that you study in groups, work on the problem sets in groups, and bring to class or office hours the exercises where you need help - but work on them seriously first (see Office Hours below). When working in groups on the problem sets, you should submit your own write-up nonetheless.

There will be six problem sets during the quarter. Problem sets will typically be posted on Wednesdays, and will be due 9 days later, in section. If you are out of town or cannot make it to a section, you can submit your problem set earlier. In this case, you have to arrange with your section TA when to hand it over **personally** (problem sets left in mailboxes or offices/desks will not be considered). No problem set is accepted later than Friday 4:00pm. Late submissions of problem sets will not be accepted, and there are no exceptions for this policy, including even medical emergency or other reasons. All problem sets, answer keys, and handouts will be available on coursework after the submission deadline.

Grading: The grade in the course will be based on three components: problem sets, a midterm exam, and a final exam. The 6 problem sets will be graded on a check-minus, check, check-plus basis. The lowest-grade problem set will be dropped, but I nevertheless strongly recommend to submit all problem sets.

The final grade for the course will be a weighted average of the above three components. The weighting system is designed to provide students who did not do well in the midterm an opportunity to do well in the course. For each student, we will calculate two averages. The first will apply weights of 20% to problem sets, 35% to the midterm, and 45% to the final. The second will apply weights of 15% to problem sets, 20% to the midterm, and 65% to the final. Your course grade will be the *higher* of the two. Thus, in case you do poorly in the midterm, it will only count towards 20% of your final grade, provided that you do well in the final.

Letter grading is intended to reflect your understanding of the course material. 'A's reflect an understanding of the concepts learned in the course, and an ability to apply those concepts elsewhere. 'B's reflect understanding of the concepts. 'C's are given to

students who can solve questions similar to those that already appeared in the problem sets. This ability is a minimal requirement to receive a passing grade in the course. Historically, about two percent of the students have failed the course, although I hope that this can be reduced to zero.

Email and other online help: Your first resource to obtain help with course-related questions are your TAs. You should not hesitate to email or meet them during office hours. In addition, I plan to answer all course-related emails that you prefer to send to me twice a week, on Monday and Wednesday evenings, and will attempt to answer all emails received by 6:00pm that day. If you think that your question can be addressed by email, this would be the preferred channel for it. Of course, I will also hold regular office hours (see the beginning of the syllabus) for issues that are hard to address by email, and necessitate a more interactive dialogue.

I have also set up our class discussion on a new system called Piazza. You can sign up at <http://www.piazza.com/stanford>. The system is highly catered to providing you help in a fast and effective manner from fellow classmates and your TAs. I encourage you to use this when stuck on a problem rather than emailing the TAs, as the likelihood of receiving a quick response is higher, and your classmates will all benefit from seeing your question and the answer. If you have any problems or would like to send feedback to the team (comprised of Stanford students and alumni), you can email them at team@piazza.com

Office Hours: I and the TAs offer office hours (OHs) every week. Please make sure to use them wisely. For example, be aware that (i) OHs are not substitutes for lectures: Do not skip lectures, asking the TA to explain the lecture slides in the OH instead, (ii) OHs are not substitutes for study groups: You should not count on your TA to walk through the problem sets before you have tried to solve the problems on your own or in your study group (of course, if you have tried and still have questions you cannot solve, then you are welcome to ask your TA for help). (iii) Some students in the past tried to work on their problem sets during the OH, sitting with the TAs. This is not acceptable, as OHs are intended for actually discussing questions that cannot be resolved in Piazza or by email, not as a substitute for a tutor. You have to be clear about what your question is before coming to the OH so that you can get the most out of it.

Texts: There is no required text. I will post the slides used during the class on coursework, and I will make sure that they have sufficient information for understanding the material. For some parts of the class, I will also post typed lecture notes on coursework. There are three textbooks that cover the same material, but in a less mathematically rigorous way than we will in class. I recommend one of the following textbooks:

- ⤴ Hal L. Varian. *Intermediate Microeconomics*. 8th Edition. Norton.
- ⤴ Robert S. Pindyck and Daniel L. Rubinfeld. *Microeconomics*. 7th Edition. Prentice Hall.
- ⤴ David Besanko and Ronald R. Braeutigam. *Microeconomics*. 4th Edition. Wiley.

These books are excellent background readings and provide more intuition and examples, which is complementary to what we cover in class. I certainly recommend reading the

relevant chapters in one of these books as we go through the quarter (relevant chapters for each topic are listed at the end of this syllabus). However, *only* the material I teach in class and that covered in the TA sections is relevant for the problem sets and exams. Therefore, if you really do not want to buy/read any book, you should be fine coming to class regularly and doing the problem sets (if you have an old edition of one of these books, that is fine as well).

All three books listed cover similar material. Varian is slightly more mathematically rigorous than the other two, so may be closer to what we cover in class. The other two are more “chatty” and potentially more entertaining. Many of you already own Besanko-Braeutigam from Econ 50, and should be just fine to keep using it, rather than purchase a new book.

Students with documented disabilities: Students who have a physical, psychological, or learning disability that may necessitate an academic accommodation or the use of auxiliary aids and services in a class must initiate the request with the Student Disability Resource Center (SDRC), not with the instructor. The SDRC will evaluate the request along with the required documentation, recommend appropriate accommodations, and prepare a verification letter dated in the current academic term in which the request is being made. Students should contact the SDRC in the first week of the quarter as timely notice is needed to arrange for appropriate accommodations. The SDRC is located at 563 Salvatierra Walk. Also see <http://www.stanford.edu/group/OAE/>

Be sure that you, the SDRC, and I have a common understanding, at least two weeks before any examination, of the precise logistical arrangements by which you will be accommodated.

Course outline: I list below the main topics we will cover, the approximate number of lectures we will spend on each topic, and the relevant chapters in each of the books. A more detailed schedule is in a separate handout, also uploaded on Coursework.

1. *Time and uncertainty* (3 lectures): Chapter 5 of Pindyck and Rubinfeld (P-R), Chapter 12 of Varian, Chapter 15.1-15.3 of Besanko and Braeutigam (B-B), and lecture notes.
2. *General equilibrium theory, externalities, public goods* (5 lectures): Chapters 16 and 18 of P-R, Chapters 31, 32, 34, and 36 of Varian, Chapters 16 and 17 of B-B, and lecture notes.
3. *Game theory* (5 lectures): Chapter 13 of P-R, Chapters 17, 27, 28, and 29 of Varian, Chapters 13, 14, and 15.4 of B-B, and lecture notes.
4. *Asymmetric information, moral hazard, adverse selection* (3 lectures): Chapter 17 of P-R, Chapter 37 of Varian, End of Chapter 15.3 of B-B, and lecture notes.