

## ECON 4070-001 TOPICS IN MICROECONOMICS

Instructor: Associate Professor Scott Savage

Office: ECON 121 (north-west corner of ground floor in economics building)

Address: Department of Economics, 256 UCB, Boulder, Colorado 80309-0256

Email: [scott.savage@colorado.edu](mailto:scott.savage@colorado.edu) Phone: 303-735-1165 Fax: 303-492-8960

Web site: <http://www.colorado.edu/Economics/people/faculty/savage.html>

Office hours: T 9.30-10.30am & 12.45-1.45pm; TH 12.45-1.45pm; or by appointment

Class time and location: T & TH 11am-12.15pm, ECON 117

### Course Description

Topics in Microeconomics develops and applies analytical techniques used by economists to examine decision making with inter-dependence, uncertainty and asymmetric information. The course comprises four parts. Part I reviews mathematical concepts and discusses behavioral economics. Part II examines risk and information in the context of utility maximization. Part III investigates problems with imperfect information such as adverse selection and moral hazard. Part IV examines topics in law and economics.

### Objectives

Develop the economic tools learned in *ECON 3070 Intermediate Microeconomic Theory* to understand how agents make optimal decisions when facing uncertainty and asymmetric information.

Use economic tools to gain greater understanding of the economics of finance and insurance markets, where risk and imperfect information play a key role.

Become comfortable using algebra, calculus and diagrams to develop models that explain microeconomic questions.

### Prerequisites

Available to students who have completed *ECON 3070 Intermediate Microeconomic Theory*. Completion of *ECON 4808 Introduction to Mathematical Economics*, or the equivalent, is desirable. Please note that the course meets a requirement for The Actuarial Studies Certificate Program. The course will be taught with mathematical emphasis. Students should be familiar with microeconomic principles, algebra, calculus, optimization techniques and probability covered in prerequisite classes, and be comfortable expressing these concepts in short-answer questions in homework assignments and examinations.

### Textbooks

There is no required textbook for this class. Appropriate readings will be indicated during lectures and updated on Desire2Learn. Outlines of lecture notes will also be provided on Desire2Learn. Your textbook from *ECON 3070 Intermediate Microeconomic Theory* will prove extremely useful for many topics. Alternatively, you may want to consider picking up a second-hand copy of: *Microeconomics*, by David Besanko and Ronald Braeutigam,

John Wiley & Sons; and/or *Intermediate Microeconomics: A Modern Approach*, by Hal Varian, W.W. Norton and Company (any latter edition).

### **Class requirements**

The class meets Tuesday and Thursday from 11am to 12.15pm. Please be aware that the critical thinking required for successful completion of this course may not come naturally for many students. In-class exposure to model building, group exercises, applied problems and solutions via class attendance is the best way to become proficient in the application of microeconomic theory and the way economists think and solve problems.

**Craig and Savage (2014)** show that a ten percent increase in attendance is associated with a one percentage point improvement in final exam score for undergraduate industrial organization students, which could mean the difference between a grade of B- and C+. See “Instructor Attire and Student Performance: Evidence from an Undergraduate Industrial Organization Experiment,” *International Review of Economics Education*, 2014, 17, 55-65.

Feel free to form study groups to review and discuss lecture/reading material, homework assignments etc., but you must submit individual work for grading (note: if you work with a study group or individual class mates on assignments, please list the names of these persons on the front page of your submitted assignment).

Students should:

- (a) attend two 75 minute lectures per week;
- (b) review and augment notes after the lectures;
- (c) complete (a minimum of five out of six) homework assignments;
- (d) complete one quiz;
- (e) complete one mid-term examination; and
- (f) complete one final examination.

Students are expected to be punctual, polite and prepared to engage in discussion with the instructor and class mates. See <http://colorado.edu/policies/classbehavior.html> for University of Colorado policies on student classroom and course-related behavior.

*There will be no cellular phones in this class.* Cellular phone use by students distracts my teaching, and other student's learning. Please turn off your cellular phone before entering class and keep the phone out of sight, i.e., place it in your bag, pocket, or purse. If I see you using your phone without permission, you will be told to leave the class.

*There will be no open laptops, tablets or other devices in this class.* Laptop and tablet use by students distracts my teaching, and other student's learning. There are lecture notes on Desire2Learn which you can bring to class, and focus on my teaching. If I see you using your laptop or tablet without permission, you will be told to leave the class.

If you have any suggestions for my cellular phone, laptop, and tablet policy, please discuss these with me during the first week of class. If you do not like the policy, no worries, don't come to class or, alternatively, find another class to enroll in. Thank you kindly.

Recent research highlights some of the negative impacts of laptops and tablets in the classroom. **Mueller and Oppenheimer (2014)** had 67 undergraduates watch lecture videos. Half were assigned to watching the lectures and taking notes on a laptop. The other half watched lectures while taking notes traditionally with paper and a pen. All students were then given an exam, and those who took notes with a laptop scored much lower on conceptual questions than those that did not. See “The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking”, *Psychological Science*, 2014, 25, 1159-1168.

### Grading

There will be six homework assignments (with the lowest score dropped from the overall grade), one quiz, one mid-term examination, and one final examination. The weights for these assessments are:

|                      |                    |      |
|----------------------|--------------------|------|
| Homework assignments | $(5 \times 8 \%)$  | 40 % |
| Quiz                 | $(1 \times 10 \%)$ | 10 % |
| Mid-term examination | $(1 \times 25 \%)$ | 25 % |
| Final examination    | $(1 \times 25 \%)$ | 25 % |

Homework questions will consist of short-answer and problem solving questions that require students to use diagrammatic, mathematical and written skills to prove their answers (i.e., please provide an appropriate method and/or logical steps to prove your answer). The presentation of your homework solutions will count in your assignment grade. Please take the time to clearly and neatly write out mathematical and graphical answers. Basic requirements for presentation include: name on first page; staple pages; place page numbers on each page; clearly title and label any graphs, tables, etc.; and ensure mathematical notation is clearly legible and readable. An electronic word document helps to ensure neat presentation, but it is not necessary. Homework must be submitted before the beginning of the class lecture (i.e., within the first five minutes) on the due date. Late submissions will incur a 25 percent penalty. No homework will be accepted after the class on the due date.

The mid-term and final examinations will consist of short-answer and problem solving questions similar to homework questions and class applications. You will need a basic non-programmable calculator to perform calculations during the exams.

There will be no make-up homework assignments, quizzes or examinations unless there is a proven emergency or other unusual circumstances that have been discussed with the instructor prior to submission/completion dates. If you are aware of any problems that may hinder your performance in the class please discuss with the instructor sooner than later. Any student that misses the mid-term examination due to proven emergency or other circumstances may have their final exam weighted up with instructor approval.

The final examination is scheduled for Monday December 14, 1.30pm-4pm. See [https://www.colorado.edu/registrar/sites/default/files/attached-files/fall2015final\\_exam\\_schedule.pdf](https://www.colorado.edu/registrar/sites/default/files/attached-files/fall2015final_exam_schedule.pdf).

## Important dates for assessment

|        |                      |
|--------|----------------------|
| Sep 8  | Homework 1           |
| Sep 15 | Homework 2           |
| Sep 29 | Homework 3           |
| Oct 13 | Mid-term examination |
| Oct 27 | Homework 4           |
| Nov 10 | Homework 5           |
| Nov 17 | Quiz                 |
| Dec 8  | Homework 6           |
| Dec 15 | Final examination    |

**Campus and department policies**

*Prerequisites.* The Department of Economics enforces prerequisites. Students without appropriate prerequisites may be administratively dropped.

*Classroom behavior.* Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to me with your legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at <http://www.colorado.edu/policies/classbehavior.html> and at [http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student\\_code](http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code)

*Discrimination and harassment.* The University of Colorado at Boulder policy on Discrimination and Harassment, the University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships apply to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH, the above referenced policies and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://www.colorado.edu/odh>.

*Honor code.* All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council ([honor@colorado.edu](mailto:honor@colorado.edu); 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from me and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found

at <http://www.colorado.edu/policies/honor.html> and at <http://www.colorado.edu/academics/honorcode/>.

*Disabilities.* If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu). If you have a temporary medical condition or injury, see <http://disabilityservices.colorado.edu/quick-links/temporary-injuries>, and discuss your needs with me.

*Religious observances.* Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please indicate by email, within the first two weeks of the semester, if there is a conflict. See full details at [http://www.colorado.edu/policies/fac\\_religh.html](http://www.colorado.edu/policies/fac_religh.html).

**Class schedule, lectures, homework etc.**

Proposed topics are provided in the table over the page. Please note that the outline of topics is subject to change during the term depending on how fast we work through the proposed topics. All changes will be announced in class and online via the class website through Desire2Learn.

Please check the website and syllabus regularly for changes.

Class lecture handouts, assignment questions, solutions and additional reading materials will be made available when appropriate via the website.

**Table 1. Proposed course outline**

| Week | Date             | Topic   |
|------|------------------|---|
| 1.   | Aug 25<br>Aug 27 | <b>Part I. Review</b><br>- Introduction<br>- Game theory                        |
| 2.   | Sep 1, 3         | - Game theory   |
| 3.   | Sep 8, 10        | - Behavioral economics  |
| 4.   | Sep 15, 17       | <b>Part II. Risk &amp; Information</b><br>- Utility maximization with certainty |
| 5.   | Sep 22, 24       | - Uncertainty, risk   |
| 6.   | Sep 29, Oct 1    | - Uncertainty, risk   |
| 7.   | Oct 6<br>Oct 8   | - Insurance and diversification<br>- Risky assets                               |
| 8.   | Oct 13<br>Oct 15 | - Mid-term exam<br>- Risky assets   |
| 9.   | Oct 20<br>Oct 22 | - Risky assets<br>- Adverse selection   |
| 10.  | Oct 27, 29       | <b>Part III. Imperfect Information</b><br>- Adverse selection                   |
| 11.  | Nov 3, 5         | - Moral hazard  |
| 12.  | Nov 10, 12       | - Contracts   |
| 13.  | Nov 17<br>Nov 19 | - Quiz<br>- Contracts   |
| 14.  | Nov 24, 26       | - <i>No classes, Fall break &amp; Thanksgiving</i>                              |
| 15.  | Dec 1, 3         | <b>Part IV. Law &amp; Economics</b><br>- Crime and punishment                   |
| 16.  | Dec 8, 10        | - Liability law   |
| 17.  | Dec 14           | - Final exam  |