

## ECON 4697-001 INDUSTRIAL ORGANIZATION & REGULATION

Instructor: Professor Scott James Savage

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Class time and location: T & TH 12.45pm-2pm, DALW 150

Due to the unusual circumstances from COVID-19, I reserve the right to update and/or modify my syllabus, if necessary, as conditions change, and additional information is produced by the University of Colorado. Please check the syllabus and Canvas regularly throughout the semester for potential changes. Thank you kindly and stay safe.

### Course Description

Industrial Organization & Regulation studies firm behavior in markets where the assumptions of perfect competition do not hold. The main focus is on the firm's choice of price, quantity of output, quality, and location, and how public policy is used to promote competitive outcomes and control market power. The course comprises three parts. Part I introduces industrial organization. Part II examines monopoly pricing and firm location decisions. Oligopoly competition is studied in Part III.

Industrial Organization asks fundamental questions about the market behavior of firms and consumers and answers those questions through casual observation, theoretical and empirical modeling, and experiments. Experiments can be conducted in the "laboratory", for example, classroom, focus groups, surveys, counterfactual analysis, etc., and in the market by way of a natural experiment. A natural experiment is a policy change that occurs for reasons not related to the outcome variable of interest. For example, "random" electricity market deregulation that permits wholesale competition in some states ("treatment group"), but not in other states ("control group").

### Objectives

Use the economic tools learned in *ECON 3070 Intermediate Microeconomic Theory* to understand optimal decision making by firms and policy makers under conditions of imperfect competition.

Become comfortable using algebra, calculus and diagrams to model different kinds of firm interactions.

Continue to develop critical thinking, oral and written communication skills with class room interaction, homework assignments, and examinations.

Understand the philosophy of economics. Identify errors in economic analysis in the popular press and the wider community.

**Prerequisites**

Available to students who have completed *ECON 3070 Intermediate Microeconomic Theory*. Students should be familiar with microeconomic principles, algebra, calculus, optimization techniques and probability covered in prerequisite classes (*ECON 1088 Math Tools for Economists 2* and *ECON 3818 Intro to Economic Statistics & Computer Applications*), and be comfortable expressing these concepts in short-answer questions in homework assignments and examinations.

**Instruction Method**

The course is designated as “Hybrid In person/Online and/or Remote” in the Department of Economics course catalog. All class materials, e.g., lecture notes, lecture videos, homework, problem sets, etc. will be available through Canvas. Students are required to read the lecture notes and watch the lectures conveniently in their own time prior to coming to class. I will conduct in person classes on Tuesday and Thursday to review and discuss parts of the lectures, solve problems and to answer your questions.

There will be no formal office hours this semester. Please ask questions during the in-person class or by email. Zoom meetings are also possible by appointment.

**Textbooks**

There is no required textbook. Appropriate readings will be indicated during lectures and updated on Canvas. Outlines of my notes will be provided on Canvas. *Introduction to Industrial Organization* by Luis Cabral (MIT Press) and *Industrial Organization: Contemporary Theory and Empirical Applications* by Lynne Pepall, Dan Richards and George Norman (Wiley) are useful supplementary textbooks. Your textbook from *ECON 3070 Intermediate Microeconomic Theory*, for example, *Microeconomics* by David Besanko and Ronald Braeutigam (Wiley), or *Intermediate Microeconomics: A Modern Approach* by Hal Varian (Norton), should also be helpful. These books are available through closed reserve.

**Class requirements**

Class meets Tuesday and Thursday from 12.45pm to 2pm. The critical thinking required for successful completion of this course may not come naturally for many students. In-class (and online) exposure to model building, group exercises, applied problems and solutions is the best way to become proficient in the application of microeconomic theory and the way economists think and solve problems. Moreover, the overall learning experience will be more effective when you are prepared (i.e., read the assigned lecture notes and watch the complementary lecture video before class).

For safety and administration reasons, please sit in the same seat throughout the semester. I will take attendance for my administrative records, but there will be no penalty for non-attendance. If you are comfortable with learning from Canvas and are performing well, you may choose not to attend *some* of the in person classes (but please keep me informed though).

Please inform me immediately if an unforeseen emergency, illness or safety concern impacts your performance. I can help, but I need to know your circumstances as soon as possible to consider suitable alternative arrangements.

Feel free to form socially-distant or online study groups to review and discuss lecture/reading material, homework assignments etc. However, you must submit individual work for grading. If you work with classmates on assignments, please list the names of these persons on the front page of your submitted assignment.

Ideally, each student should:

- (a) read the assigned lecture notes and watch the complementary video(s) prior to each week's classes;
- (b) attend two 75-minute classes each week;
- (c) review and augment their notes after class;
- (d) be punctual, polite and respectfully engage in class discussion;
- (e) complete (a minimum of six out of seven) homework assignments;
- (f) complete one mid-term quiz;
- (g) complete one mid-term examination;
- (h) complete one final examination; and
- (i) carefully practice the University's health and safety measures .

*Cellular phones, laptops, tablets and other devices.* Personal use of these devices can distract my teaching and other student's learning. Please do not use your device to talk, text, go online, access social media, etc., in class. You may use your device for learning, e.g., electronic notes, photographs of the chalk board, etc., and to practice appropriate health and safety measures. However, if you use your device for personal activities that distract me or other students, I will ask you to leave the classroom immediately.

### Grading

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

Homework assignments	$(6 \times 8.33\%)$	50 %
Mid-term quiz	$(1 \times 20 \%)$	20 %
Mid-term examination	$(1 \times 20 \%)$	20 %
Final examination	$(1 \times 10 \%)$	10 %

Homework will consist of short-answer and problem-solving questions that require you to use diagrammatic, mathematical and written skills to prove your answers (i.e., provide an appropriate method and/or logical steps). Homework presentation will count for 20 percent of each of your assignment grades. Please write your mathematical and graphical answers clearly and smartly. Basic requirements for presentation include page numbers, appropriate labels for figures, graphs, tables, etc., clear and transparent economic and mathematical notation, and good grammar and flow. You may use a word processor and/or write neatly with a pen (see Canvas for an example solution). Homework must be

saved as a pdf file and uploaded to Canvas by 5pm on the due date. Submissions after 5pm on the due date will incur a 25 percent penalty. No homework will be accepted after 11.59pm on the due date.

The mid-term quiz and mid-term exam will be completed in class. The final exam will be completed remotely (more specific details will be provided later in the semester – see <https://www.colorado.edu/registrar/students/calendar/finals>). The mid-term quiz will (largely) be a multiple-choice questionnaire. The mid-term and final examinations will consist of short-answer and problem-solving questions similar to homework questions and class applications. You may need a basic non-programmable calculator to perform calculations during the quiz and examinations (I will let you know beforehand).

Make-up homework assignments, quizzes or examinations will only be given when there is a proven emergency, health or safety concern, or other unusual circumstance that are discussed with the instructor prior to submission/completion dates. If any issues hinder your performance in the class, please discuss with the instructor sooner than later. Any student that misses the quiz or mid-term exam due to a proven emergency or other circumstances may have their other assessments weighted up with instructor approval.

Fall break 2020 has been shortened to Thursday and Friday, November 26-27. After fall break, all classes will be remote (synchronous) or online (asynchronous) through the end of the semester.

Important dates for assessment

Sep 10	Homework 1
Sep 17	Homework 2
Oct 1	Homework 3
Oct 13	Mid-term examination
Oct 22	Homework 4
Oct 29	Homework 5
Nov 10	Mid-term quiz
Nov 19	Homework 6
Dec 3	Homework 7
To be determined	Final examination

The Department of Economics typically provides a free drop-in tutorial office which helps many courses in the major. Details for these tutorials have yet to be announced. Please check in with me after the semester starts.

### **Campus and department policies**

The Department of Economics enforces prerequisites. Students without the appropriate prerequisite(s) may be administratively dropped.

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 the instructor with the student's 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. For more information, see the policies on [classroom behavior](#) and the [Student Code of Conduct](#).

The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (including sexual assault, exploitation, harassment, dating or domestic violence, and stalking), discrimination, and harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or [cureport@colorado.edu](mailto:cureport@colorado.edu). Information about the OIEC, university policies, [anonymous reporting](#), and the campus resources can be found on the [OIEC website](#).

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code ([honor@colorado.edu](mailto:honor@colorado.edu); 303-492-5550). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the [Honor Code Office website](#).

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. Required safety measures at CU Boulder relevant to the classroom setting include:

- maintain 6-foot distancing when possible;
- wear a face covering in public indoor spaces and outdoors while on campus consistent with state and county health orders;
- clean local work area;
- practice hand hygiene;
- follow public health orders, and

- if sick and you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or if you live on-campus, please alert [CU Boulder Medical Services](#).

Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to [Student Conduct and Conflict Resolution](#). For more information, see the policies on [COVID-19 Health and Safety](#) and [classroom behavior](#) and the [Student Code of Conduct](#). If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the “Accommodation for Disabilities” statement on this syllabus.

Before returning to campus, all students must complete the [COVID-19 Student Health and Expectations Course](#). Before coming on to campus each day, all students are required to complete a [Daily Health Form](#).

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home and complete the [Health Questionnaire and Illness Reporting Form](#) remotely. In this class, please inform me as soon as possible if you may be absent due to illness or quarantine.

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be discussed and addressed. For this class, “timely” means during the first week of the semester. Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu) for further assistance. If you have a temporary medical condition or injury, see [Temporary Medical Conditions](#) under the Students tab on the Disability Services website.

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please indicate by email, by the end of the first week, if there is a conflict. See the [campus policy regarding religious observances](#) for full details.

### **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 semester depending on how fast we work through the proposed topics (and the extent to which we are adversely impacted by external factors). Any changes will be announced in class and online through Canvas.

Please check Canvas and the syllabus regularly for changes.

Lecture notes and videos, assignment questions and solutions, and additional materials will be available through Canvas.

**Table 1. Proposed course outline**

Week	Date	Topic
1.	Aug 25 Aug 27	<b>I. Introduction</b> - Introduction to industrial organization <b>II. Monopoly power</b> - Monopoly pricing
2.	Sep 1, 3	- Monopoly pricing
3.	Sep 8, 10	- Monopoly pricing - Product positioning
4.	Sep 15, 17	- Product positioning
5.	Sep 22, 24	- Price discrimination I (two-part tariffs)
6.	Sep 29, Oct 1	- Price discrimination I (two-part tariffs) - Price discrimination II (versioning, bundling, etc.)
7.	Oct 6, 8	- Price discrimination II (versioning, bundling, etc.)
8.	Oct 13 Oct 15	- <i>Mid-term examination</i> <b>III. Oligopoly competition</b> - Quantity competition
9.	Oct 20, 22	- Quantity competition
10.	Oct 27, 29	- Price competition I (homogenous products)
11.	Nov 3, 5	- Price competition II (differentiated products) - Collusion I (single-market contact)
12.	Nov 10 Nov 12	- <i>Mid-term quiz</i> - Collusion II (multi-market contact)
13.	Nov 17, 19	- Mergers
14.	Nov 24, 26	- <i>No classes: Fall break &amp; Thanksgiving</i>
15.	Dec 1, 3	- Mergers - Review and conclude
16.	Dec 8 Dec 9 – 13	- Reading day - <i>Final examination period</i> (date to be determined)