Course description and purpose
In this course we will learn basic non-cooperative game theory and apply it to study how oligopolistic firms compete domestically and internationally.

Course objectives
Upon completing this course, you will be able

- to solve static and dynamic games under complete and incomplete information.
- to analyze strategies used in oligopolistic industries.
- to evaluate the governments’ industrial and trade policies.

Prerequisites:
Principles of microeconomics

Textbook:
No required textbook; I will post complete lecture notes (in installments)


How to succeed in this class
I will post complete lecture notes. Notes explain the models and show how to solve them.

I will also post short videos to explain key concepts for many topics/models we study.

Notes also contain exercises/workout problems. Solve all of them.

The exams will ask you to solve similar questions.

Some answers to exercises/workout problems are found in the notes.
Additional answers will be posted later.

Course requirements / grading
Your course grade will be based on one mid-term exam, the final exam and a short analysis of an article, to be assigned later. All exams are cumulative and proctored.

For the analysis part, I will select a short essay question (maybe based on some newspaper article) in the fifth week of the course and ask you to analyze it and turn in your analysis by June 15. It should not take much time and should be a page or two long.

<table>
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<tr>
<th>Requirements</th>
<th>Dates</th>
<th>Weights</th>
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<tbody>
<tr>
<td>Mid-term exam I</td>
<td>May 22</td>
<td>0.3</td>
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<tr>
<td>Mid-term exam II</td>
<td>June 05</td>
<td>0.3</td>
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<td>Final Exam:</td>
<td>June 19</td>
<td>0.3</td>
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<tr>
<td>Analysis</td>
<td>due June 15</td>
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N.B. The exam dates may be subject to change.

Your final grades are assigned as follows (there may be + and -):

- A = 90% or above,
- B = 80 - 89%
- C = 70 - 79%
- D = 60 - 69%
- F = 59 % or lower

Course topics: Note that this syllabus is not a fixed document and is subject to revisions.

Week 1: (May 11-) Static games of complete information

We begin with static games of complete information, in which players make one moves simultaneously. We then learn how to solve such games. To do so we develop two solution concepts: dominant-strategy equilibrium and Nash equilibrium. You will also learn when to play mixed strategies.

Week 2: (May 18 -) Basic oligopoly models

This week we will apply the models from week 1 to solve basic models of oligopoly, including Cournot, Bertrand and Hotelling and Salop. These models will be used throughout the rest of the course.

Week 3: (May 25-) Dynamic games of complete information

This week we study dynamic games, where players have the chance of move more than once. You will learn why not all Nash equilibriums are reasonable predictions in such games and why we need to refine Nash by appealing to the notion (subgame) perfection. We will also study dynamic aspects of
oligopolistic competition (i.e., how an incumbent monopoly deters entry of competitors) and how government policies can influence the nature of competition.

*Week 4: (June 1-) Repeated games*
This week is devoted to the study of repeated games, in which the players interact with each other over an infinite number of times. Repeated games are applied to long-run business strategies of cooperating with rivals and how free trade works

*Week 5 (June 8-) Games of incomplete information*
This week, we will study games of incomplete information, where the players do not have complete information about some aspects of games they play, e.g., what kind of opponents they face. We will introduce the notion of Bayesian equilibrium to solve such games. In particular we will devote our time to the most interesting class of games of incomplete information called signaling games. We will then apply the models to understand why behaviors that do not make sense under complete information do when you realize information is incomplete.

*Week 6 (June 15-) Grand finale*
Summary and review.