Course Description

This course is concerned with decision-making by small numbers of economic agents whose fates are intertwined. That is, each agent only partially determines his or her own fate. The other agents also have an influence. For example, the profits achieved by a firm depend not only on its own decisions, but also on those of its competitors. Similarly, the outcome of international trade depends on the trade policies of all trading parties. What outcomes might occur in such situations? This course is primarily about game theory, which presents standard tools for economists to analyze such questions.

We will first consider a theory of decision-making by a single agent who faces an uncertain future. This is a foundation for game theory, since an agent may be uncertain of the choices of the other agents. We will see how certain axioms lead to the expected utility model of behavior. We will briefly consider alternatives to expected utility.

The remainder of the course will be concerned with non-cooperative behavior between two or more agents. By non-cooperative, we mean that each agent chooses a strategy independently of the other agents, trying to maximize his or her own payoff. This will involve considerations of dominated strategies and of Nash equilibrium and its refinements. We will discuss static and dynamic games, both with complete and incomplete information.

Course Requirements

You must have taken Econ 7030 and be familiar with probability before taking this course. Logical thinking will help you to understand the various new concepts to which you will be introduced.

Your grade will be based on two exams, homework and a paper. I encourage you to discuss the homework with other students, but you must write your answers individually. The paper should extend or apply a game theory paper which is in the literature. The weights are as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework</td>
<td>25 %</td>
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<tr>
<td>Midterm</td>
<td>25 %</td>
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<tr>
<td>Paper</td>
<td>20 %</td>
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<tr>
<td>Final</td>
<td>30 %</td>
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</tbody>
</table>

Textbooks:


References:


Rasmusen, E., *Games and Information*, 2nd Ed., Blackwell, 1994 (Good summaries)


Shubik, M., *Game Theory in The Social Sciences*, MIT Press, 1985 (Broad, cooperative and non-cooperative)


COURSE OUTLINE (Chapter numbers: K=Kreps, G=Gibbons)

Choice under Uncertainty (K 3)

Static Games of Complete Information (G 1)

Dynamic Games of Complete Information (G 2)

Static Games of Incomplete Information (G 3)

Dynamic Games of Incomplete Information (G4)