COURSE CONTENT

Course Coordinator  
Tan Teck Yong

Course Code  
HE3002

Course Title  
Game Theory and Applications

Pre-requisites  
HE2001 Intermediate Microeconomics

No of AUs  
3

Contact Hours  
39 hours (2 hours lecture and 1 hour tutorial per week)

Course Aims
Game theory is the study of strategic interactive decision making. It is widely used in political science, psychology and evolutionary biology, and it is the dominant paradigm of modern economic analysis. The first part of this course introduces the central concepts and the tools of game theoretical analysis, and the second part focuses on the use of game theory in economics with applications drawn upon settings such as auctions, oligopoly and price wars, organizational design and labour contracts. The course is aimed at 3rd and 4th year students interested in using mathematical modeling to study economic questions.

Intended Learning Outcomes (ILO)
By the end of this course, you (as a student) would be able to:

1. Describe what is a “game” in the language of game theory and define the key ingredients of a game.
2. Transform an economic relationship between two or more parties into a “game” and analyze (i.e., make predictions) the relationship from the lens of game theory.
3. Explain the differences in the information structure of a game and categorize each game into a game of perfect information, imperfect information, complete information, or incomplete information.
4. Apply the appropriate equilibrium concept for games with different information structures.
5. Critically evaluate the predictions made by each equilibrium concept and identify its short-comings.

Course Content
1. Definition of a “game” and strategies.
2. Dominance solvable.
4. Dynamic games of complete information: subgame perfect Nash equilibrium.
5. Static games of incomplete information: Bayes Nash equilibrium (BNE).
7. Dynamic games of incomplete information: perfect Bayesian Equilibrium (PBE).
8. Application of PBE 1: strategic communication and persuasion.
Assessment (includes both continuous and summative assessment)

1. CA1 : 25%
2. CA2 : 15%
3. Final Examination : 60%

Total : 100%

Reading and References

This book covers many, but not all topics in the course. The book is optional.

Course Instructors

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Office Location</th>
<th>Phone</th>
<th>Email</th>
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<tbody>
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Planned Weekly Schedule

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