MODULE OUTLINE

BSE3711
STRATEGIC THINKING – ECONOMIC APPLICATIONS

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COURSE OVERVIEW AND OBJECTIVES

How could the rise of online price comparison shopping engines and websites, like Google Shopping and Priceme, mitigate the price competition by the vendors rather than intensify it? What is the secret behind Samsung's championship in the semiconductor DRAM rivalry in which the global chipmakers' market share competition could ruin everyone's profitability? Why do men offer their fiancées diamond rings when proposing and not vice versa? The key feature of these situations is that one's decision influences others and the players' interests are interdependent – so called a 'game' situation

In modern business environments in which uncertainty and strategic interdependence surround competitive conducts, conflict interfaces with mutual dependence among rivals. Decision makings in such situations are necessarily complicated in that one must take into account the actions taken or likely to be taken by others and the essence of business success naturally lies in making right strategic decisions, requiring one to think through the likely moves and countermoves of the rivals. Furthermore, good decision makers (or managers) would form expectations about the behavior of others and also attempt to influence the rivals' behaviors by systematically evaluating the variables subject to their control and using these variables to manipulate the outcomes, ultimately for their own – or, many times, mutual – benefits. Business, after all, is a high-stakes game and game theory should come forefront as a strategic tool, for it provides structured perspectives on how to make right decisions under such interdependent circumstances.

This business economics elective module aims to provide an introduction to the study of non-cooperative game theory to discuss various strategic situations as above, in dimensions of both theory and applications. We will set out by going over selected motivating stories before reviewing the game elements that are fundamental in representing strategic situations in a rigorous game form. And then we will study the game equilibrium concepts and algorithms together with managerial/economic and real life applications in various contexts. The former applications include bargaining, market competition, advertising, pricing strategies, predatory and pre-emptive conducts, strategic trade policy, transportation policy, entry and entry-deterring behavior, mechanism design, moral hazard and adverse selection, signalling/screening and optimal incentive schemes, while the latter include sports, politics, dating and marriage, lawsuits, gambling, diet efforts, movie scenes, TV quiz shows etc. In-classroom game experiments will be conducted as well, and we will touch upon the newly flourishing area of behavioral economics both from behavioral decisions and behavioral game theory perspectives.

Analytical rigor would be a necessity when analyzing strategic situations. However, we will deal with the topics primarily in an intuitively appealing fashion while maintaining the necessary rigors as well. Knowledge of intermediate microeconomics, basic algebra and calculus skills are assumed throughout the course. Given the COVID-19 issues, we will take a hybrid teaching format, combining face-to-face and online approaches.

COURSE TOPICS AT A GLANCE
(The details are subject to adjustments.)

Week	Dates	Topics
1	10 Jan – 14 Jan	Overview: Motivating Stories and Fundamentals of a Game
2	17 Jan – 21 Jan	Static Games and Pre-Nash Equilibrium Concepts
3	24 Jan – 28 Jan	Static Games and Nash Equilibrium
4	31 Jan – 4 Feb	Applications of Static Games
5	7 Feb – 11 Feb	Oligopolistic Interactions in Static Settings with Applications
6	14 Feb – 18 Feb	Review and Midterm Test
	Recess Week (19 Feb – 27 Feb)	
7	28 Feb – 5 Mar	Dynamic Games and Sequential Rationality: Backward Induction and Subgame Perfection
8	7 Mar – 11 Mar	Applications of Dynamic Games and Repeated Interactions
9	14 Mar – 18 Mar	Strategic Moves and Applications
10	21 Mar – 25 Mar	Game Theory of Incomplete Information
11	28 Mar – 1 Apr	A Snapshot into Behavioral Economics
12	4 Apr – 8 Apr	Case Presentations
13	11 Apr – 15 Apr	Wrap-ups and Final Test

ASSESSMENT

This is a 100% CA (continuous assessment) module. The CA will be broken down as follows and more details on assessment will be briefed during the first class:

Assessment Components	Weightage
(Group Assessment)	
1. Problem Sets	20%
2. Case Presentation	20%
(Individual Assessment)	10%
3. Class Attendance and Participation	20%
4. Midterm Test	30%
5. Final Test	

The assessment categories 1 and 2 in the above – problem sets, case presentation – are based on group work. Students will be asked to form their own team, the details of which are to be announced during the first class. All the group members are expected to work jointly and cooperatively as a team, all of whom would receive the same evaluation for their work regardless of the individual variation in their contribution.

TEACHING/LEARNING VEHECLES

1. Lecture Notes

There is no official textbook for the module. Instead, our classes will be based on the comprehensive lecture notes designed by the lecturer. The lecture notes will be uploaded to LumiNUS before each class.

2. Reference Books

Lecture notes have been created by the lecturer and did not follow a particular textbook. However, those who are looking for references are recommended to refer to any of the following books, although not required:

- Avinash Dixit and Barry Nalebuff (2008), *The Art of Strategy*,
- Avinash Dixit, Susan Skeath and David Reiley (2020), *Games of Strategy*,
- Joel Watson (2013), *Strategy – An Introduction to Game Theory*,
- Presh Talwalker (2014), *The Joy of Game Theory – An Introduction to Strategic Thinking*

3. Miscellaneous Readings

Various reading materials to accompany each lecture notes will be introduced through LumiNUS. These readings are important supplementary learning aids and many of these materials, if not all, will be discussed in class. Students are expected to have read them before the classes and actively participate in classroom discussions.

4. Case Discussion

Students are expected to apply their learning to the real situations through the case presentation project. Cases, designed by the lecturer to fit with the major topics we discuss, are composed of the news, articles and reports from academic journals, newspapers, professional magazines and internet sites etc. Each case comes with a set of discussion questions prepared by the lecturer to guide students. Students will be asked to challenge these cases as a team and present in class.

5. Problem Sets

Problems sets comprise comprehensive questions which will require a solid understanding of the course materials and an ability to reshape them. Problem Sets are not solely for an assessing of your knowledge but should rather be taken as an independent learning vehicle. Students are to work on the problem sets jointly and cooperatively within their own team.

6. For Those Who Need Help

I will be available for consultations in and out of the classroom, so please do not hesitate to initiate for help in case you need it. Both email and face-to-face consultations will be welcomed.

ACADEMIC HONESTY & PLAGIARISM

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources. Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, you should consult your instructor.

Additional guidance is available at:
http://www.nus.edu.sg/registrar/adminpolicy/acceptance.html#NUSCodeofStudentConduct

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