[BUS450] Strategic Interaction and Decision Making

(Subtitle: Game Theory and Practice)

Spring, 2018

Course Introduction

Course Title	Strategic Interaction and Decision Making
Course Code	BUS450
Credit Hours	3
Semester & Year	Spring, 2018
Pre-requisites	Microeconomics, Calculus

Class Type	Days	Time	Room
Lecture	Wednesday	13:00pm-14:30pm	905
	Friday	13:00pm-14:30pm	905

Instructor

Instructor	KyunHwa Kim
Room	1003
Consultation Hours	1. Monday and Friday (16:00 – 17:30) 2. Other times: By appointment (Send Email for appointment)
Email	khkim@solbridge.ac.kr
Telephone	82 42 630 8550

Mission Map

Mission Based Goals 	Approximate % of Course Content	Approximate % of Assessment
Global Perspective	25%	25%
Asian Expertise	25%	25%
Creative Management Mind	25%	25%
Cross Cultural Communications	5%	5%
Social Responsibility	20%	20%
Total	100%	100%

SolBridge Mission & Course Objectives

SolBridge International School of Business strives for excellence in educating the next generation of Asian thought leaders. Through research and scholarship we seek to contribute to and enrich the understanding and practice of management within the for-profit, not for-profit and governmental environments. Through our teachings, learning's and engagement with the business world, and with the support of our staff, we aspire to cultivate our students owning

Global perspectives, Asian Expertise, Creative management foundation, Cross-cultural competence and Social responsibility.

Every day, we face various strategic situations in which decision makers interact. From the 'games' (in common word), such as chess, poker, tick tac toe, rock-scissors-and paper, etc., to strategic conflict among nations, political campaigns, competition among firms, and trading behavior in markets, we live in the world of various strategic interaction.

This course aims to sharpen strategic thinking and gain a better understanding of decision making in complex, interactive environments through the game theoretical reasoning. Knowledge of game theory will give students an advantage in such strategic settings. Game theory provides the rigorous conceptual tool (mathematical modeling) of strategic interaction among rational agents, and suggests the best solution to agents as a form of an equilibrium. From this course, students will learn the various possible marketing/business strategies based on game theoretical logic, and the optimal decision making from strategic thinking.

This course outlines the basics of good strategy making and then shows how you can apply them in any area of your life. At the beginning, you will learn how to represent the various strategic situations as a game and basic game theoretical concepts with applications. After introducing important competitive strategies, you will be asked to enhance negotiation and bargaining skills based on their learning. Special game theoretic issues such as lemon market (adverse selection and job market signaling), moral hazard, and auction will be covered at the end of the class, and you will have the chances to implement those strategies during the simulation game.

The goal of this course is to understand more about strategic interactions. You will be familiar with mathematical thinking and rigorous arguments. Relatively little specific math is required, but basic probability theory and light calculus would be helpful.

Learning Outcomes

Following successful completion of the course, students will have better understanding for addressing the following tasks that constitute strategic interaction and decision making.

1. Understanding strategic interaction among the rational agents
2. Apply game theory to various competitive situations in business
3. Analyzing situations in which decision makers interact
4. Designing a better strategy for competitive edge
5. Developing strategic thinking and logical insights

Teaching Methodology

The course will be taught as a mixture of lectures and practice. Important game theoretic concepts will be introduced via lecture while relevant practical issues will be covered via various practices (including group discussion, and simulation games) in the class. Each group or student is encouraged to participate in 'active learning' in order to apply those concepts to real world strategies in marketing, and management.

Based on the main text book, the related lecture notes will be uploaded via online (Smart system). Through the weekly online lab exercise (simulation games-'MobLab'), students have a chance to implement the real strategies learned from the class.

Course Materials and Readings

Main Textbook

Title: "An Introduction to Game Theory"
Author: OSBORNE, Martin J.
Publisher: Oxford University Press

Textbook (recommended)

These books will complement the applications and real world examples of main text book.

i) Title: Strategy: An Introduction to Game Theory
Author(s): Joel Watson
Publisher: W. W. Norton & Company
Edition: 3 edition (May 9, 2013)

ii) Title: Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life
Author(s): Avinash K. Dixit, and Barry J. Nalebuff
Publisher: W. W. Norton & Company; Reissue edition

Assessment Method

There are four components to assessment in this course

Component	Weight
1. Midterm Examination	25%
2. Final Examination	25%
3. Class Participation (group activity+ *Online Lab Exercise**)	30%
4. Class Attendance	20%
Total	100%

Midterm Examination (25%)

The examination will be for 80 minutes and will cover the concepts discussed in class. The instructor will announce the format of the examination in class at a later date. There will be a mock exam in order to help students review the materials and prepare the exam one week before the midterm (TBA).

Final Examination (25%)

The examination will be for 80 minutes and will cover the concepts discussed in class after midterm exam. The instructor will announce the format of the examination in class at a later date.

Class Participation (Group activity+ *Online Lab Exercise** **30%)**

In every class, we will play a online/offline game in class that will need everyone's participation. This evaluation includes that students not only participate the course actively, but also provide extra motivation for learning. Students will have the chances to apply game theory to various strategic situation in the real world and sharpen their strategic thinking and logical insights.

During the class students are assigned to discuss and present one simple case study of relevant topic or solve one exercise from the lecture. By finding the answers for qualitative questions or practicing the quantitative exercises, students can review the materials and concepts immediately after the lecture and have better understanding of strategic decision making.

Also, there will be weekly (or bi-weekly) online lab exercises, which is called 'MobLab.' After the lecture, you will asked to play some simulation games. These games are aimed to illustrate some of the concepts from the course by implementing strategies.

The performances of these game will count as a grade for this activity. **The student who misses the class won't have access to the points provided by each exercise.**

**Moblab: https://www.moblab.com/*

The task will be announced later in detail (this will be in-class activity).

Groups

Much of those works is done in groups. Students have to form groups of 3 members, and submit the names of each group member to (the) instructor by week 2. Students who have not formed groups by this deadline will be randomly allocated to groups by the instructor.

Class Attendance (20%)

Class attendance is very important for all students. Please attendance each class during the semester. The absence of the class is excused only

If the student does not come to class, the student won't have access to the points provided by each activity. Following Woosong policies, it is expected that students attend all sessions. Documented excuses need to follow the respective policies developed in Solbridge. I won't accept excuses presented to me more than **one week** after the missing session. There are **no exceptions** to this! You must provide documented proof of a serious illness or trauma related injury through an official medical certificate within the allotted time.

Course Outline

This is a tentative outline. There will be adjustments as we move along. In each class, the instructor will announce the reading material for the next class.

Course Schedule

Week		Topic
Week 1	Lecture	1.What is the "Game"?
	Lecture	(strategic interaction and decision making)

Week 2	Lecture	2.Representation of a game and its solution: How various competitive situations in business can be represented as a game? 2-1.Games in Strategic form and Nash equilibrium 2-2. Examples of Strategic form games
	Lecture with Simulation game 1	Strategic games 1 (Prisoner's Dilemma, Matching Pennies, the Stag Hunt, Chicken game)
Week 3	Lecture	3.Analyzing strategic behaviors 3-1. Dominated strategy and applications of the elimination of Dominated strategies 3-2. Examples of Nash equilibrium
	Lecture with Simulation game 2	Strategic games 2 (Hawk-Dove, Battle of Sexes, Beauty contest game)
Week 4	Lecture	4.Unpredictable strategy: randomizing is the best strategy for the game of rock, scissors, and paper! 4-1. Pure Strategy and Mixed Strategy 4-2. Zero-Sum games & Min-max strategy
	Lecture with Simulation game 3	Strategic games 3 (Matching Pennis, Hide and Seek, Rock paper and scissors)
Week 5	Lecture	5.Application of Strategic games 1: firm's optimal strategies in oligopoly market 5-1. Quantity competition (Cournot's model) 5-2. Price competition (Bertrand's model)
	Lecture with Simulation game 4	Strategic games 4 (Cournot competition, Bertrand Competition)
Week 6	Lecture	6.Application of Strategic games 2: firm's optimal location choice 6-1. Product differentiation (Hotelling model) 6-2. Electoral competition (Median Voter theorem)
		7.Application of Strategic games 3: special topics 7-1. Tragedy of the commons 7-2. Network effect and coordination games
	Simulation game	(if possible: two candidates election, tragedy in commons)
Week 7	Lecture Lecture with Simulation game 5	8.Commitment and credibility 1: theory 8-1.Extensive form games with perfect information 8-2. Backward induction and Subgame perfection
		Backward induction and games (Stackelberg Competition, centipede game, ticktacktoe)
Week 8	Midterm	Lecture with Midterm review (mock exam)
		Midterm
Week 9	Lecture	9.Commitment and credibility 2: practice 9-1.How to improve the credibility of commitment? (tying one's hands, reputation, brinkmanship) 9-2. Threat and Promise: Examples and application
	Lecture with Simulation game 6	Bargaining Games 1 (Alternating offer-in class games)
Week 10	Lecture	10. Bargaining and arbitration strategy: negotiation skills-how to increase your profit/utility in bargaining? 10-1.Ultimatum bargaining (finite horizon bargaining) 10-2.Rubinstein Bargaining model (infinite horizon bargaining)
	Lecture with Simulation game 7	Bargaining Games 2 (Alternating Offer, Multilateral Bargaining, Ultimum game,)

Week 11	Lecture	11.Application of repeated games: firm's optimal pricing strategy 11-1. Cartel and collusion (OPEC, price leadership) 11-2. Trigger-price strategies
	Lecture with Simulation game 8	Repeated Games (repeated alternating offer games, repeated prisoner's dilemma games)
Week 12	Lecture	13. Special topic 1: Market for lemon 13-1. Hidden types and Market for lemon 13-2. Adverse selection and its solution: signaling
	Lecture with Simulation game 9	Incomplete information games (Market for lemon)
Week 13	Lecture	13. Special topic 2: Moral Hazard 13-1. Hidden actions and Moral Hazard 13-2. Moral Hazard and its solution: mechanism design
	Lecture (or presentation)	13-3. Mechanism design and its application: firm's optimal price discrimination, product differentiation,
Week 14	Lecture	14. Special topic 3: Auctions
	Lecture with Simulation game 10	Auctions (Private value sealed bid auction, Common value sealed bid auction)
Week 15	Final	Lecture with Final review (mock exam)
	Lecture with Simulation game 10	Final exam

Plagiarism, Copying and Academic Dishonesty

I. Plagiarism is the unauthorized use of another's work or ideas and the representation of these as one's own.

Definition of Plagiarism: "The practice of taking someone else's work or ideas and passing them off as one's own". (OED)

This includes among others but not limited to

(a) copying another individual's or group's ideas and work, copying materials from the internet and other published sources and producing such materials verbatim,

(b) Using others' ideas and work without proper citation of the original proponent or author of the idea. Students are expected to produce original work of their own for assignments and examinations. A comprehensive definition and explanation of plagiarism will be given during the first class period, and students are expected to take serious note of this explanation.

These rules apply to internet sources also. Students are strongly advised to access the following website and learn how to avoid plagiarism. It is the student's responsibility to learn this on his/ her own.

http://owl.english.purdue.edu/owl/resource/589/01/

SolBridge considers plagiarism as a serious breach of professional ethics. Plagiarism will not be tolerated in any form at SolBridge. Penalties can be as severe as expulsion from the university. To avoid plagiarism it always best to do your own work or cite the work of others appropriate. Refer to your student handbook for a more detailed description of plagiarism and the associated penalties.

In this class, the rules are:

1. The first instance of plagiarism will result in a "zero" for the assignment in question.
2. The second instance of plagiarism will result in a fail grade for the entire course.
3. The third cumulative instance of plagiarism, academic dishonesty and violation of school disciplinary rules in this and other classes will result in serious disciplinary action which could include expulsion from SolBridge.
4. The instructor will report each instance of plagiarism, academic dishonesty and violation of school disciplinary rules to the disciplinary officer.

II. Copying Textbooks. copyrighted materials and academic dishonesty

A. Copying Textbooks and other copyrighted materials without permission of publisher or author is tantamount to theft. Therefore, students are expected to purchase the prescribed books and other materials from the Woosong Bookstore.

- Students using copied versions of books without permission will be asked to leave the classroom.
- In addition, such students will get "zero" participation points and any other penalties as levied by the instructor.

B. Academic Dishonesty includes but not limited to: (a) plagiarism, (b) cheating during examinations, (c) obtaining/ providing information for reports, assignments and examinations by fraudulent means, (d) falsification of information or data, and (e) false representation of others' effort as one's own.

Some examples of academic dishonesty are: copying from other students during examinations; copying material from other students' reports/ assignments and submitting the same as one's own report; creating fictitious interview materials for assignments or reports. These are just a few examples and not exhaustive.

In this class, the rules are:

1. The first instance of academic dishonesty will result in a "zero" for the assignment in question.
2. The second instance of academic dishonesty will result in a fail grade for the entire course.
3. The third cumulative instance of plagiarism, academic dishonesty and violation of school disciplinary rules in this and other classes will result in serious disciplinary action which could include expulsion from SolBridge.
4. The instructor will report each instance of plagiarism, academic dishonesty and violation of school disciplinary rules to the disciplinary officer.

The rules on plagiarism, copying and academic dishonesty are non-negotiable.