1. Synopsis of the Course
The goal of this course is to have you integrate game-theoretic reasoning into your management thinking. To achieve this, we will study this central question: How can we describe situations in business (and the world) as mathematical games, and what can we learn from doing so?

We will address this big question by tackling a series of smaller questions:

a. What is a strategy? We will look at how decision trees and game trees can be used to define and examine an individual or organizational strategy. We will study examples of real-world situations where there was either no strategy or only a partially defined strategy, and look at what went wrong in these cases. Next, we will consider the possibility of numerical assessment of consequences of strategies and of uncertainties relevant to strategies. We will define and compare decision criteria, including expected payoff and maximin.

b. What is rationality—and irrationality? We will examine what it means to say that a strategy is rational—or irrational. We will discuss when it is better to assume that another player’s strategy is rational, even if this means assuming that player sees the situation very differently from how we do.

* This course is based on a course developed by Adam Brandenburger. It draws on much work with his colleagues Ken Corts, Elon Kohlberg, and Vijay Krishna.
c. What is the role of beliefs? We will investigate when our beliefs and other beliefs are relevant to our strategic choice. We will see whether shaping beliefs should be viewed as a strategic option.

d. What is a game matrix? We will explore what happens when a player’s moves are not observable. We will investigate the impact this can have on strategic uncertainty. We will consider changes to game that will allow us to deduce what others will do.

e. How should strategic uncertainty be managed? We will look at whether strategic uncertainty can be useful or harmful, and whether it should be created or eliminated.

f. Can we exploit our context? We will look at when there are ways to exploit our external context and when we should try to change it.

g. Where do payoffs come from? We will develop the concept of contributed value as a measure of the power of each of the players in a game. We will use this measure to analyze how the overall pie in a game gets divided.

h. What is the pie? We will revisit the basic concept of the value chain: suppliers, business, customers. We will look at some examples of re-defining the value chain. We define value creation along the chain and look at qualitative and quantitative examples of assessing value creation.

i. What is my contributed value? We will look at various games and assess the value contributed by each of the players.

j. How do I choose the game? We will use contributed value to analyze the consequences of different moves and countermoves in games. We will use this formulation to analyze various real-world strategies.

k. When is a strategy efficient—or inefficient? We will define the efficiency or inefficiency of a strategy in terms of its effect on the overall pie—i.e., from an overall social perspective. We will review the different strategies we have seen in the course and classify them according to this criterion.

My hope is that, by the end of the course, you will find yourself integrating game-theoretic thinking into your business analyses.

2. Design of the Course
The language of game theory is mathematical, and we will use some mathematics in the class. But this does not mean that there will be lots of numbers or techniques. Rather, you should think of what we will do as more an exercise in careful logic, with some simple calculations thrown in. We will use the power of mathematics to state our assumptions precisely and to deduce what follows from them. The mathematics in the course should not be a hurdle for anyone.
We will consider examples mostly from the world of business, but we will also look at examples from politics, history, military strategy, and elsewhere.

The course presupposes no prior knowledge of game theory. This said, the course should also benefit anyone who has already taken a course in the subject, since it contains both theory and applications outside the standard curriculum.

3. Course Materials
This is mostly a paperless course. Slides for the course will be posted on Blackboard. (I will bring hard-copies to class.)

I will post assignments on Blackboard as the course progresses. Exercises used in the assignments will be available on Blackboard as well. There is no textbook.

There will be a short casebook. The cases will be used to provide background context for the exercises in the assignments. The focus of the course will be on the exercises, not case analyses.

4. Graded Work and Participation
Your grade for this class will be based on one group assignment, individual exercises, and a final paper.

In the first class, you will be asked to split into 4-6 person groups for the group assignment. (There will be a google docs sign-up sheet.)

**Group Assignment:**
Each group will put together and present a short slide deck (approx. five slides) that takes a business, political, historical, etc. situation and describes it as a game. The purpose is to practice applying game theory this way, to share examples with one another, and to stimulate class discussion. Each presentation should last 10-15 minutes, with an additional 10-15 minutes of class discussion led by the group. The presentations will be graded on a check/check plus/check minus scale. This will comprise 30% of your grade.

**Individual Assignments:**
For most classes, there will be a stylized exercise or two. Each of these counts 3% of your grade for a total of 30%. (There are ten of these exercises.) You will get full credit as long as you make an honest attempt to do them. (It is not necessary to get them correct – in fact, class discussion is often more interesting when people have different answers.)

**Final Paper**
The final paper should be about a situation which you have encountered in your own personal or professional experience. You should show how the situation can be described as a game, and explain what can be learned by viewing the situation as a game. (Alternatively, the paper can be a write-up of your group presentation.) Grading of this assignment will be based on the
precision of your game-theoretic description, the clarity of your writing, and the lessons you are able to draw from your description. (Typical length of this assignment is four to six pages.) This will comprise 40% of your grade. The paper may be written in small groups.

**Attendance and Participation**
Everyone is expected to attend all classes and to participate actively in class. Over the course, I will make a judgment about each student’s level of involvement in class discussions.

I will use a judgment about your class participation to decide grades that are on the borderline between two grades.

**5. Course Policies**
The Stern Honor Code applies to this course. In particular:
- Please be sure to arrive on time and not leave early.
- Please do not use laptops or iPads.
- Please remember to turn your cell phone off.

If you need to miss a class, please send me an email (in advance, if at all possible) letting me know. Remember that the course depends on your being present and participating.