

# Game Theory & Decision Analysis

## Vital Information

ECON481

Monday & Wednesday 2:30 – 3:45;

MARKSTEIN 211

Office and Hours: Craven 6231,

Thursdays 11:00 – 12:00; 1:30 – 2:30

Contact: [afinkle@csusm.edu](mailto:afinkle@csusm.edu), 760-750-4198

Readings, notes and homework will appear on  
the <http://webct6.csusm.edu> course page.



Photo by Irving Penn, 1947

## Nature of the Course

The broad aim of this course is to improve your decision-making ability. We will consider individual decision analysis (decision trees, strategies, expected value and uncertainty) and strategic decision analysis (i.e. game theory). The foundation of this course is rational choice theory, but we will also consider the psychological factors that influence behavior (framing, starting point bias, etc). This course will explore the tools that are fundamental to the well-rounded economists toolbox, and provide a systematic analysis of strategic game theory to help us analyze behavior in complex environments.

To be adequately prepared for this course, you are required to have taken at an introductory microeconomics class. It is also important that you are comfortable with basic algebra and simple graphical analysis. The models and applications we will study in this class primarily utilize logic and algebra.

## Course Materials

There are two books to purchase for this course. The first is the primary textbook we will be using:

Games of Strategy 2<sup>nd</sup> Ed. by Avinash Dixit and Susan Skeath (W.W. Norton & Co.: New York), 2004. (referenced by [DS] below)

The first edition is not an acceptable substitute for the second edition.

A second (optional) text is a popular bestseller on game theory:

Thinking Strategically, by Avinash Dixit and Barry Nalebuff (W.W. Norton & Co.: New York), 1991. (referenced by [DN] below)  
Additional readings will be provided online for download.

### **Teaching Philosophy**

I believe that the best way to learn is through active learning. In fact, there is much evidence to support this. Students who engage in the material are more likely to retain the knowledge and in less time! Parts of this class will be lecture based, introducing new concepts and terminology. However, lectures encourage passivity and passivity is a poor way to learn the material. To encourage you, I will regularly provide various in-class activities and games to illustrate the material. Like ice skating, the only way to improve your game theory skills to engage in problem solving.

I expect students to attend all classes, engage in the material by asking and answering questions and participating in class activities and discussion. Preparation is a must – I expect you to complete readings before class. Reading also requires you to take notes, retain material and come to class with specific questions or comments.

I will try to provide you with a class that is informative, useful, applied, and entertaining. If at any point you desire clarification on expectations or material, I encourage you to set up an appointment to meet with me. I hope you enjoy the semester!

### **Assignments and Grading**

Your grade will be determined by a midterm, final exam, homework (approximately 6 assignments), 3-4 short announced quizzes, and classroom activities (preparation, participation, exercises and experiments).

- 25% In-Class and Homework Assignments
- 25% Quizzes
- 25% Midterm
- 25% Final

Homework assignments will be assigned at least one week in advance of their due date. Quizzes will occur periodically and be announced one week in advance – they will typically take just over half of a class period. Classroom activities include problem solving, participation with discussions and lecture, games, and group work. As a strict policy, I do not accept late assignments or provide make-up for missed in-class assignments. No exceptions!

## Schedule

- I. Games and Strategy Examples  
Read [DS] Ch. 1, [DN] Ch. 1
- II. Individual Decision Theory (2-3 weeks)
  - a. Economics of Rational Choice: Preferences, Benefit-Cost Principle  
Read: Bauman Ch. 1, Friedman Ch. 1
  - b. Uncertainty: Probability, Expected Value, Expected Utility Theory  
Read: Bauman Ch. 2, [DS] Ch. 5 Appendix
  - c. Economics of Irrational Choice: Framing, Loss Aversion  
Read: Tversky and Kahneman "The Framing of Decisions and the Psychology of Choice," Science, v. 211, January 1981.
- III. Basics of Non-cooperative Games (4-5 weeks)
  - a. Sequential-Move Games of Complete Information  
Read: [DS] Ch. 2 & 3; [DN] Ch. 2 & 3
  - b. Simultaneous-Move Games  
Read: [DS] Ch. 4
- IV. Mixed Strategies  
Read: [DS] Ch. 5
- V. Sequential vs. Simultaneous Move Analysis  
Read: [DS] Ch. 6
- VI. Review and Midterm (1 week)
- VII. Asymmetric Information, Signaling and Screening  
Read: [DS] Ch. 9
- VIII. Further Complexity (6 weeks)
  - a. Repeated Games and Folk Theorems  
Read: [DS] Ch. 8, *Prisoners' Dilemma* reading
  - b. Bargaining Games  
Read [DS] Ch. 17
- IX. Review and Final Exam  
Final Exam Dec. 10<sup>th</sup> 1:45 – 3:45