

California State University, Sacramento  
Department of Economics  
Spring 2006

**ECON 161: FUNDAMENTALS OF GAME THEORY**

*"Man has almost constant occasion for the help of his brethren,  
and it is in vain for him to expect it from their benevolence only.  
He will be more likely to prevail if he can interest their self-love in his favour,  
and show them that it is for their own advantage to do for him what he requires of them..."*

--Adam Smith (1776)  
"An Inquiry into the Nature and Causes of the Wealth of Nations"

**Instructor:** Rossitza Wooster  
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**Class Meetings: AMD 217**  
MW: 3:30 – 4:45 pm  
**Office Hours\***  
Tues.: 9:30 – 11:30 am  
\*By Appointment

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Syllabus

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**Prerequisites** • STAT 1, ECON 1B  
**Recommended** • Econ 100B

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**Learning Objectives** The objective of this course is to provide you with an intuitive and formal understanding of how Game Theory can be used to inform decisions requiring strategic skills. To the extent that most human interactions are strategic, one might say you play games of strategy every day: with your parents, siblings, teammates, friends, enemies, even with your professors. This course builds on the instinctive expertise you may already have by introducing you in a formal context to strategic games in which players move sequentially, or simultaneously, or employ mixed strategies. Throughout the course you will also learn about some broad classes of games such as Prisoner's Dilemma, Battle of the Sexes, the game of 'Chicken', and other games played under conditions of either perfect information or uncertainty.

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**Textbook** • "Games of Strategy" by Avinash Dixit and Susan Skeath, 2<sup>nd</sup> Edition.

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**Exams** Graded components in this class include the following:

- Five practice problem sets, each worth 5%, together comprise 25% of your course grade. Throughout the semester 6 problem sets will be administered and graded – the one with the lowest score will be dropped.
- Two midterm exams, each worth 25%, together comprise 50% of your course grade.
- Final exam is worth 25% of your course grade.

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**Grading** Grades will be assigned according to the following point scale:

- A = 90 or higher
- B = 80 – 89
- C = 65 – 79
- D = 55 – 64
- F = 54 and below

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**Policies**

- Exams cannot be rescheduled. Please DO NOT enroll in this course unless you can take the exams at their scheduled times (see “Tentative Schedule” section). The only exceptions to this rule are: (i) documented medical emergencies; and (ii) absence due to active military, police, and/or jury duty (need letter from the appropriate official).
  - If you arrive more than 20 minutes after the time an exam is scheduled to begin, you will not be allowed to take that exam.
  - Improving your grade through “extra work” is not an option in this class! In addition, an Incomplete (letter grade “I”) or a Withdrawal (letter grade “W”) is not to be viewed as a substitute for an “F”.
  - Students with documented learning disabilities or special needs, must contact me at least a week in advance of scheduled exams if use of the Testing Center’s facilities is required. It is the student’s responsibility to arrange for accommodations through the Testing Center and provide me with the appropriate documentation in the beginning of the semester.
  - Familiarize yourself with CSUS academic honesty policies. Minimum penalty for academic dishonesty in this class will be letter grade “F” for the assignment or exam in question.
  - Turn off your cellular phone, beeper, pager, or any other communication device/PDA that may disturb, disrupt, or in any way impede the learning process during class meetings.
  - Attendance is strongly encouraged but not mandatory. If you miss class, it is your responsibility to find out what you missed, get notes from peers, etc.
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## Tentative Schedule

<b>Week One</b> 1/23/06-1/27/06	<ul style="list-style-type: none"> <li>• Introduction and General Principles (<u>Reading</u>: Chapter 1, D&amp;S)</li> <li>• How to Think about Strategic Games (<u>Reading</u>: Chapter 2, D&amp;S)</li> </ul>
<b>Week Two</b> 1/30/06-2/03/06	<ul style="list-style-type: none"> <li>• How to Think about Strategic Games (<u>Reading</u>: Chapter 2, D&amp;S)</li> <li>• Games with Sequential Moves (<u>Reading</u>: Chapter 3, D&amp;S)</li> </ul>
<b>Week Three</b> 2/06/06-2/10/06	<ul style="list-style-type: none"> <li>• Games with Sequential Moves (<u>Reading</u>: Chapter 3, D&amp;S)</li> <li>• <b>Problem Set No. 1 <u>DUE in class – Monday, Feb. 6<sup>th</sup>, 2006</u></b></li> </ul>
<b>Week Four</b> 2/13/06-2/17/06	<ul style="list-style-type: none"> <li>• Simultaneous-Move Games with Pure Strategies I (<u>Reading</u>: Chapter 4, D&amp;S)</li> </ul>
<b>Week Five</b> 2/20/06-2/24/06	<ul style="list-style-type: none"> <li>• Simultaneous-Move Games with Pure Strategies I: Discrete Strategies (<u>Reading</u>: Chapter 4, D&amp;S)</li> <li>• <b>Problem Set No. 2 <u>DUE in class – Monday, Feb. 20<sup>th</sup>, 2006</u></b></li> <li>• <b>MIDTERM 1 – Wed., February 22<sup>nd</sup>, 2006 (3:30 - 4:45 p.m., AMD 217)</b></li> </ul>
<b>Week Six</b> 2/27/06-3/03/06	<ul style="list-style-type: none"> <li>• Simultaneous-Move Games with Pure Strategies II (<u>Reading</u>: Chapter 5, D&amp;S)</li> <li>• Simultaneous-Move Games with Pure Strategies III (<u>Reading</u>: Chapter 5, D&amp;S)</li> </ul>
<b>Week Seven</b> 3/06/06-3/10/06	<ul style="list-style-type: none"> <li>• Combining Sequential and Simultaneous Moves (<u>Reading</u>: Chapter 6, D&amp;S)</li> </ul>
<b>SPRING RECESS</b> 3/13/06-3/17/06	<ul style="list-style-type: none"> <li>• <b>Campus Closed – Happy Spring Break!</b></li> </ul>
<b>Week Eight</b> 3/20/06-3/24/06	<ul style="list-style-type: none"> <li>• Simultaneous-Move Games with Mixed Strategies I (<u>Reading</u>: Chapter 7, D&amp;S)</li> <li>• <b>Homework No. 3 <u>DUE in class - Monday, March 20<sup>th</sup>, 2006</u></b></li> </ul>
<b>Week Nine</b> 3/27/06-3/31/06	<ul style="list-style-type: none"> <li>• Simultaneous-Move Games with Mixed Strategies II (<u>Reading</u>: Chapter 8, D&amp;S)</li> </ul>
<b>Week Ten</b> 4/3/06-4/7/06	<ul style="list-style-type: none"> <li>• Simultaneous-Move Games with Mixed Strategies III (<u>Reading</u>: Chapter 8, D&amp;S)</li> <li>• <b>Homework No. 4 <u>DUE in class - Monday, April 3<sup>rd</sup>, 2006</u></b></li> <li>• <b>MIDTERM 2 – Wed., April 5<sup>th</sup>, 2006 (3:30 - 4:45 p.m., AMD 217)</b> <i>Note: Midterm 2 will NOT be comprehensive. It will include all material covered since the Midterm 1.</i></li> </ul>

## Tentative Schedule (cont.)

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<b>Week Eleven</b> 4/10/06-4/14/06	<ul style="list-style-type: none"><li>• Uncertainty and Information (<u>Reading</u>: Chapter 9, D&amp;S)</li></ul>
<b>Week Twelve</b> 4/17/06-4/21/06	<ul style="list-style-type: none"><li>• Strategic Moves (<u>Reading</u>: Chapter 10, D&amp;S)</li></ul>
<b>Week Thirteen</b> 4/24/06-4/28/06	<ul style="list-style-type: none"><li>• The Prisoners' Dilemma and Repeated Games (<u>Reading</u>: Chapter 11, D&amp;S)</li><li>• <b>Homework No. 5 <u>DUE in class - Monday, April 24<sup>th</sup>, 2006</u></b></li></ul>
<b>Week Fourteen</b> 5/01/06-5/05/06	<ul style="list-style-type: none"><li>• The Prisoners' Dilemma and Repeated Games (<u>Reading</u>: Chapter 11, D&amp;S)</li><li>• Evolutionary Games (<u>Reading</u>: Chapter 13, D&amp;S)</li></ul>
<b>Week Fifteen</b> 5/08/06-5/12/06	<ul style="list-style-type: none"><li>• Evolutionary Games (<u>Reading</u>: Chapter 13, D&amp;S)</li><li>• <b>Homework No. 6 <u>DUE in class - Monday, May 5<sup>th</sup>, 2006</u></b></li></ul>
<b>Finals Week</b> 5/15/06-5/19/06	<ul style="list-style-type: none"><li>• <b>FINAL – Wednesday, May 17<sup>th</sup>, 2006 (3:00 p.m. -- 5:00 p.m.).</b> <i>Note: The final will NOT be comprehensive. It will include all material covered since Midterm 2.</i></li></ul>

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