

**Portland State University
Department of Economics
Spring 2010**

Ec 410/510: 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

Office: Cramer Hall, 241-J

Phone: 503.725.3944

E-mail: wooster@pdx.edu

Web site: <http://web.pdx.edu/~wooster/index.html>

Class Meetings: NH 381

MWF: 12:45 – 1:50 pm

Office Hours*:

R: 10:00 am – 12:00 pm

*By Appointment

Syllabus

Prerequisites

- EC 201, EC202;
MTH 251, STAT 243/244

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.

Textbook

“Games of Strategy” by Avinash Dixit, Susan Skeath, and David Reiley, 3rd Edition, Norton (ISBN: 978-0-393-93112-9)

Exams

Graded components in this class include the following:

- *Four problem sets, each worth 10 % of the final grade, together comprise 40% of your course grade. Homework assignments must be typed out (where applicable, equations/diagrams can be neatly written/drawn in). Points will be deducted for any illegible portion of a homework assignment. Failure to show work will also result in point deduction – remember to always show your work!*
- *Midterm exam is worth 30% of course grade.*
- *Final exam is worth 30% of course grade.*

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 term.
 - Familiarize yourself with PSU 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.
-

Tentative Schedule

Week One	<ul style="list-style-type: none"> • Introduction and General Principles (<u>Reading</u>: Chapter 1) • How to Think about Strategic Games (<u>Reading</u>: Chapter 2)
Week Two	<ul style="list-style-type: none"> • How to Think about Strategic Games (<u>Reading</u>: Chapter 2) • Games with Sequential Moves (<u>Reading</u>: Chapter 3) • <i>Problem Set No. 1 DUE in class – Friday, April 9, 2010</i>
Week Three	<ul style="list-style-type: none"> • Games with Sequential Moves (<u>Reading</u>: Chapter 3)
Week Four	<ul style="list-style-type: none"> • Simultaneous-Move Games with Pure Strategies I: Discrete Strategies (<u>Reading</u>: Chapter 4) • <i>Problem Set No. 2 DUE in class – Friday, April 23, 2010</i>
Week Five	<ul style="list-style-type: none"> • Simultaneous-Move Games with Pure Strategies I: Discrete Strategies (<u>Reading</u>: Chapter 4) • <i>MIDTERM EXAM – Friday, April 30, 2010</i>
Week Six	<ul style="list-style-type: none"> • Simultaneous-Move Games with Pure Strategies II (<u>Reading</u>: Chapter 5)
Week Seven	<ul style="list-style-type: none"> • Combining Sequential and Simultaneous Moves (<u>Reading</u>: Chapter 6)
Week Eight	<ul style="list-style-type: none"> • Simultaneous-Move Games with Mixed Strategies I & II (<u>Reading</u>: Chapter 7) • <i>Homework No. 3 DUE in class – Friday, May 21, 2010</i>
Week Nine	<ul style="list-style-type: none"> • Uncertainty and Information (<u>Reading</u>: Chapter 9) • Strategic Moves (<u>Reading</u>: Chapter 10)
Week Ten	<ul style="list-style-type: none"> • The Prisoners' Dilemma and Repeated Games (<u>Reading</u>: Chapter 11) • Evolutionary Games (<u>Reading</u>: Chapter 13) • <i>May 31, 2010 (Monday) – Happy Memorial Day (University Closed)!</i> • <i>Homework No. 4 DUE in class – Friday, June 4, 2010</i>
Finals Week	<ul style="list-style-type: none"> • <i>FINAL EXAM – Monday, June 7, 2010 from 12:30 – 2: 20 pm.</i> <i>Note: The final will NOT be comprehensive. It will include all material covered since the midterm exam.</i>