

ECO 4400-01: Games and Decisions
Fall Session 2005
Syllabus and Course Overview

Basic Course Information:

Instructor: Greg Burge

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Web Page (BB): <http://campus.fsu.edu>

Class Time: T-TH 3:35 PM- 4:50 PM

Office Location: 149 BEL

Office Hours: T-TH 2:30 PM- 3:30 PM

Office Telephone: 644-7647

Class Meeting Room: 0203 BEL

What is Game Theory all about?

This course is an introductory course into strategic decision making (i.e., game theory). Before we even begin this semester- you all sit here with certain bits of knowledge about strategic decision making because you have all come across situations in your daily lives that required you to think about strategy. Everything from trying to bargain with your parents to let you borrow the car to trying to get the professor to take your excuse for being absent- these are all strategic situations (games if you will). The study of game theory is all about formalizing a set of tools that can be used to analyze lots of different strategic environments. The tools you will learn in this class can be applied to situations as diverse as: 1) A parent arguing with a child over getting a candy bar in the grocery store; 2) A group of buddies playing poker; 3) An estate auction; and 4) Two competing bicycle supply stores both located in a small town. The point is that game theory is all about being able to engage in complex strategic analysis of diverse real world situations.

Course Expectations & Objectives:

It is expected that students coming into this class are familiar with the material that is covered in ECO 2023, Principles of Microeconomics. While not a prerequisite, it would also be very helpful for students to have taken ECO 4101, Intermediate Micro Theory. This class will make use of mathematics- mostly simple algebra and probability concepts but some basic calculus would also be helpful. While I cover problems using these techniques in class I will generally explain the math that we are making use of- but basic algebra skills will not be covered and students are assumed to be competent in this area.

Upon completion of this course, you should be able to:

1. Define and be familiar with much of the basic terminology used in game theory.
2. Understand the basic problem solving techniques commonly used to solve different types of games.
3. Apply your understanding of terminology, concepts, problem solving techniques and general theories so that you are able to analyze strategic decision making environments as they occur in the real world.

Books and Materials:

The required text for the course is *Games of Strategy*, 2nd Edition, by Avinash Dixit and Susan Skeath. To this point, my opinion of the text is that it is pretty good. I purposely choose a text that a felt 'reads well' (basically, most of the time the text filled up with a bunch of very technical mathematical definitions and complex proofs- rather it's presents most of the concepts in plain English before getting into examples that maybe use some math or more formal language). The text also provides lots of sample games- these are a great study tool. In addition to outlining several example problems in the text, there is an exercises section at the end of each Chapter with sample problems. In the end, this class is going to be about you taking problems given to you that describe a strategic environment with the expectation that you can analyze it using the terminology and solution techniques you have learned. So this is very much a course where practice makes perfect rather than just read the book and just memorize a bunch of terms or facts.

My endorsement of the text doesn't mean it is perfect though- at a few points during the course I will make an effort to point out places where the terminology they use is NOT consistent with what the rest of the world uses for a couple of keys concepts. While there are many different paths an instructor could take in covering this material- I will go ahead and try to follow the order of the text for your sake. Other books cover these exact same topics in different orders- other than hitting the basic building blocks first, there isn't really a right/wrong order to cover some of the more advanced topics in.

I recommend staying current or ahead in the readings. As you can see, below is the **tentative** outline for the material. However, it is very likely that I will at times be slightly ahead or behind that schedule. I will try my best to let you know where we are so you can stay current. The exam dates are set already and I will stick to those.

A Note of Office Hours:

The listed office hours are those in which I promise to you that I will be in my office and able to help you. If there are particular circumstances that will cause me to be away during my scheduled office hours, I will try to announce that in class beforehand and let you know when they are to be made up. In addition to office hours, I spend a fair amount of time in my office and students should feel free to stop in while I am there. Provided I have nothing pressing at the time, I will be happy to assist you. Students may also schedule times (through e-mail or in person) to meet with me.

E-mail and Course Mailing List:

All students will need an FSU e-mail address. I will occasionally use the course mailing list- you are automatically put on the course mailing list when you register for this class. Communication will also come through the blackboard website where I can post messages that everyone registered can see. In light of this, please be sure to check your FSU e-mail and the course website during the semester. Also, any student who wishes to communicate with me privately should use my personal e-mail.

Student Evaluation:

Homework Problem Sets: As I already said, game theory is a good example of something you learn by doing. As such, you will be expected to complete 6 different homework problem sets over the course of the semester. Of these, only your 5 highest scores will count towards your final grade. I will hand out homework assignments several days before the problem set is due and have them with me in subsequent class meeting times also. All problem sets will have a specific due date and are due by 3:45 (just a bit after class starts) with no exceptions to receive full credit. Problems sets turned in after this time but by the following class meeting will receive 75% credit. (In addition to bringing them the next class, you can bring late homework sets to my office, if I am not there, slide them under the door.) Homework sets turned in more than one class period late will not be accepted. (Take note of this now and do not be surprised by it later on in the semester) Part of the reason I have this strict policy (as we will learn later in the course when we cover bargaining) is so I have my hands tied when it comes to excuses- they are all handled according to this policy. However- I recognize this strictness can be overly rough when you have a legitimate excuse which is why I only count the 5 highest. Please note that it is NOT a good idea to skip an early assignment because then what happens if you run into a situation where you have a legit problem causing you to miss one. (In EXTREME cases where the student can document to my satisfaction that very legitimate excuses are involved with multiples items, I may make special arrangements- but please realize how difficult this would be to meet- just because you miss your second for a legit excuse doesn't mean you are covered on the first) Also, to reward those who do all six- for all students turning in all 6 and receiving passing grades on all 6- I will add 5 points to whatever your average score on the highest 5 is. In total, homework sets will be worth 30% of your grade, or 6% for each counted set. The homework is meant to prepare you for the examinations and should be taken seriously.

Midterms: We will have 2 midterm exams during the semester. Each will count for 20% of your final grade for a total of 40%. No midterm scores may be dropped. The dates for these exams have already been set. Test questions will be similar in spirit to what you see on the homework. The exams are not specifically cumulative. However, to the extent that the material we are covering builds on itself (and you will certainly see that it does) the material from earlier portions of the course may be reflected in later exam questions. Since no test score may be dropped, students are able to make up an exam provided they have a legitimate reason for having missed it. Students who miss an exam are required to get in touch with me (ASAP) to schedule their make up. All make-up exams must be taken within *one week* of the original exam with no exceptions. Failure to make up an exam within one week will result in a 0 which may not be dropped. If you know ahead of time you will have to miss an exam please see me as early as possible.

Final Exam: The final exam for this class will be 5:30-7:30PM on Monday, Dec. 12th. If you have a conflict with this date, see me personally before finals week. If you have an emergency and miss the exam, contact me ASAP and I will attempt to work out a makeup time with you. The final exam will count for 30% of your final grade. A select few problems on the final will come from earlier portions of the course material.

Extra Credit: There will **not** be any extra credit given in this class. My experience has been a straightforward grading system with a fair curve is the best way to handle grading at this level. Remember, your grade for this class will be based on your performance over the **entire** term. Please for last minute extra credit projects/assignments to boost your grade will not be heeded.

Curve: I will curve your exam scores based on the highest score for that particular examination. (So if the highest natural score is a 95, everyone gets 5 points- if it's a 92, everyone gets 8 and so on) For the most part, this means the curve is almost always very small. While not at all likely, I do reserve the right to apply the same procedure but based off the second highest score. (For example, one student gets a 100, 2nd highest is a 94, and 3rd highest is a 90- I may choose to give everyone 6 rather than 0). Please **DO NOT** rely on the curve bringing up a low score because they **NEVER DO**. There is no curve applied to homework scores. The curve as described here is the only curving I will do- I will **NOT** apply a further curve at the end of the semester of any sort.

Grades:

As you can see from above, your final grade will be constructed in the following way:

1. Homework, 30% (5 at 6% each)
2. Midterm Exams, 40% (2 at 20% each)
3. Final Exam, 30%

Letter grades will be determined as follows:

A range:	90.0-100
B range:	80.0-89.99
C range:	70.0-79.99
D range:	60.0-69.99
F	less than 60

Also, I will assign plusses and minuses to letter grades at a 2.5% scale as suggested by the University. For example, if your final score is 87.49, you will receive a B. If your final grade is 87.50, you will receive a B+. (The same principle applies to minuses, if you have an average of 82.49 you will earn a B- but if you have 82.50 you will earn a B.) Understand that these are the rules of the game, I will not 'bump' you up at the end of the course because you are 'close'. ('Close' is a subjective term and all students in my class deserve to be treated exactly the same. This rule is as much for your protection as it is mine, there must be cutoffs somewhere and it's best to have unambiguous ones.)

Each of your assignments will be handed back to you during or directly after class so that you can keep track of your grade throughout the semester. Please do not come to me before the final with an average that is failing and ask me if a decent score on the final will bring you up to a C. If you want a certain grade (which is great, I like motivation!) then see me right after you receive scores that are not at the desired level and discuss with me ways you can try to improve. Remember that the material builds on itself so a slow start on your part can hurt your grade more than you think because you will use certain important ideas over and over again.

Class Attendance:

Regular class attendance is *highly* encouraged. However, attendance is not required or used to calculate your final grade. Having said that, routine class attendance has been *well documented* as dramatically affecting student performance in college courses. This is particularly true in a class like this where seeing problems worked out and practicing them yourselves will make such a difference. You are all responsible for yourselves and coming to class is your individual decision to make. Understand that my progression through the course material will not slow down or speed up based on class attendance. This means we are just as likely to cover important material on a Friday before a football game as we are on any other meeting time.

In addition to my endorsement of regular attendance, please remember the following:

1. Please avoid entering or exiting the classroom during class unless absolutely necessary. If you do come in late or have to leave early, please sit near the exit and be as quiet as possible while you are coming in/going out. Disruptions are not appreciated.
2. Also, please do not contend with me for attention during class. Whispering/talking or other disruptions such as cell phone rings should not occur. You need to be responsible for turning off your cell phones before class. Having said all of this about avoiding disruptions, students should always ***feel free*** to interrupt me if they have a pertinent question or meaningful thought to share during class. Class discussion is a **fantastic** way to learn and I will, at times, specifically try to initiate class discussions. Remember that 90% of the time you have a question, someone else in the room is wondering the same thing!

Preparation for Class:

Please be promptly on time for class. In addition, it is strongly recommended that you read through the material we are going to cover before you come to class. Often, students find that it is helpful to briefly read or skim through the assigned readings before an instructor presents the material. After the material is presented in class, it is then useful to read the text again and make sure the ideas are clear to you. The final piece of the puzzle should be you actually working out problems that are similar to those you will see on your exams and the final. The homework is meant to do this but I would also suggest going further and attempting other problems. (Such as those at the end of chapters) The following is a TENTATIVE schedule that I will attempt to stick to.

Tentative Schedule:

The Following is a tentative schedule for this course. Please note that I may be slightly ahead or behind this outline at any given time depending on our class meetings. The test dates are firm however. By necessity, we will not cover all the material presented in each covered Chapter. You will only be tested on material we cover in class and on homework assignments.

Date	Topic	Readings & Exams
Aug. 30th (T)	Intro to class, syllabus	Chapter 1 & 2
Sept. 1st (TH)	Intro to Game Theory & Overview	Chapter 1 & 2
Sept. 6th (T)	Sequential Move Games	Chapter 3
Sept. 8th (TH)	Sequential Move Games	Chapter 3
Sept. 13th (T)	Simultaneous Move Games (PS)	Chapter 4
Sept. 15th (TH)	Simultaneous Move Games (PS)	Chapter 4
Sept. 20th (T)	Simultaneous Move Games- (PS II)	Chapter 5
Sept. 22nd (TH)	Simultaneous Move Games- (PS II)	Chapter 5
Sept. 27th (T)	Review, Homework Coverage, and Flextime	
Sept. 29th (TH)	Midterm Exam #1	
Oct. 4th (T)	Mixed Strategy Nash Equilibrium	Chapter 7
Oct. 6th (TH)	Mixed Strategy Nash Equilibrium	Chapter 7
Oct. 11th (T)	Mixed Strategy NE- Coordination Games	Chapter 8
Oct. 13th (TH)	Expected Utility and Risk	Chapter 7: Appendix
Oct. 18th (T)	Asymmetric Information Games	Chapter 9
Oct. 20th (TH)	Signaling and Screening	Chapter 9
Oct. 25th (T)	Strategic Moves- Threats and Credibility	Chapter 10
Oct. 27th (TH)	Threats and Credibility: Brinkmanship	Chapter 14
Nov. 1st (T)	Review, Homework Coverage, and Flextime	
Nov. 3rd (TH)	Midterm Exam #2	
Nov. 8th (T)	Prisoners' Dilemma and Repeated Games	Chapter 11
Nov. 10th (TH)	Prisoners' Dilemma and Repeated Games	Chapter 11
Nov. 15th (T)	Collective Action Games	Chapter 12
Nov. 17th (TH)	Collective Action Games	Chapter 12
Nov. 22nd (T)	Strategy and Voting	Chapter 15
Nov. 24th (TH)	Thanksgiving Break	ENJOY!!
Nov. 29th (T)	Auction Theory- Formats and Bid Strategies	Chapter 16
Dec. 1st (TH)	Auction Theory- Revenue and Efficiency	Chapter 16
Dec. 6th (T)	Review, Homework Coverage, and Flextime	
Dec. 8th (TH)	Review, Homework Coverage, and Flextime	
Dec. 12th (M)	Final Exam	Final Exam

Honor Code Statement:

Academic dishonesty in this course will not be tolerated in any form. The Academic Honor System of Florida State University is based on the premise that each student has the responsibility to uphold the highest standards of academic integrity in the student's own work, refuse to tolerate violations of academic integrity, and foster a high sense of integrity and social responsibility. Cheating of ANY form will *NOT* be tolerated. An instance of academic dishonesty will be dealt with harshly; at *minimum*, all students involved will receive a zero for that exam and the grade may not be dropped. However, students are allowed and even encouraged to work jointly on homework assignments. However, the purpose of the homework is to prepare you for the exams so simply copying someone else's work without contributing to the work will help you very little.

Students with Disabilities:

Students with disabilities needing accommodation should: 1) register with the Student Disability Resource Center (SDRC) and 2) bring a letter to me from the SDRC indicating that you need academic accommodation. This should be done during the first week of class, or immediately after the disability has been diagnosed, so that an appropriate academic accommodation can be worked out.