

## **ECONOMICS 410.01**

### **GAME THEORY**

**FALL 2018, TTh 11:00 - 12:20 PM, MORTON 341**

**PROFESSOR LISA ANDERSON**

### **Course Description**

Game theory is a set of mathematical models used to study how individuals make decisions when their actions affect each other. The emphasis of the course material is a mix of formal theory and applications, including bargaining, public choice and information. While economists turn to game theory to model many situations, the field is firmly rooted in mathematics. Thus, you will struggle in the course if you are not very comfortable with college-level algebra and basic calculus. In addition to mathematical modeling, this course will make extensive use of economics experiments to identify situations where game theory predicts actual behavior and to learn more about why game theory fails to predict behavior in some settings.

### **A Common Complaint**

The most common complaint I receive about this course is that “the exams are much harder than the sample problems.” Of course **the exams are much harder than the sample problems**. When working on sample problems, you do not have time limits. You can use your text and notes to solve these problems. The sample problems cover material from only one chapter of the text, while an exam combines material from many chapters. To earn a good grade in this course, you must be able to take material from your text and class notes and apply it to new problems. Many people find that difficult, and the average grade in this course in any given semester is about one and a half letter grades lower than the average GPA reported on course evaluations.

### **Useful Information**

Office: Tyler Hall, Room 265  
Office Phone: 221.2359  
Office Hours: by appointment  
E-mail: lisa.anderson@wm.edu

### **Important Dates**

Fall Break: October 13 - 16.  
Optional Midterm Exam: Thursday, October 18.  
Last Day to Withdraw: October 26.  
Thanksgiving Break: November 21 – 25.  
Last Day of Class: December 6.

Cumulative Final Exam: Thursday, December 13, 2 – 5 pm. (Please consult the registrar’s official exam schedule later in the semester for confirmation of this day and time:

<http://www.wm.edu/offices/registrar/calendarsandexams/examschedules/fall18exam/index.php>)

### **Required Reading**

The text for this course is *Games of Strategy*, 4<sup>th</sup> Edition, by Dixit, Reiley and Skeath. Other readings and class information will be available through the blackboard system.

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### Grades and Policies

Your grade for this course will come from class participation and a group project (20%), an optional midterm exam (35%), and a **cumulative** final exam (45% or 80%). I will provide details about the group project later in the semester.

I do not accept assignments via e-mail. Further, it is your responsibility to back up all files. I do not grant extensions on assignments because of computer viruses, dead hard drives, stolen laptops, etc.

There will be **no makeup exams** unless you are participating in a College sponsored activity during the exam period. In the event that you do not take the midterm exam, your final exam will count for 80% of your course grade. I cannot change the time or date of the final exam, so please plan your travel accordingly.

Please do not tell me what grade you need in this class. If you have a goal to earn a certain grade in this class, you should choose behaviors (attending class, studying for exams, etc.) to help you achieve that goal.

### Accommodations

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2512 or at [sas@wm.edu](mailto:sas@wm.edu) to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please see <http://www.wm.edu/sas>

### Course Outline and Readings

#### I. Rules of the Game

- A. Introduction to Game Theory, Chapters 1-2
- B. Sequential Games, Chapter 3
- C. Simultaneous Games with Pure Strategies, Chapters 4 - 5
- D. Games with Simultaneous and Sequential Moves, Chapter 6
- E. Simultaneous Games with Mixed Strategies, Chapters 7

#### II. Applications

- A. More on the Prisoners' Dilemma, Chapter 10
- B. Collective Action Games, Chapter 11
- C. Bargaining, Chapter 17
- D. Auctions, Chapter 16
- E. Uncertainty and Information, Chapter 8
- F. Others topics to be determined later, as time permits