

GAME THEORY & THE PRISONERS' DILEMMA

1. Text: We will use the textbook, *Games & Information*, by Eric Rassmussen.
2. Readings: Additional readings will also be used, available at the Johnson Center. A list will be passed out after the first week of class.
3. Office Hours: Tuesday, 1:15 – 1:15pm, at Carow Hall. Other times by appointment (just ask before or after class). If possible, I will answer questions just after class when that is more convenient for students (avoiding the extra time to meet at my office in Carow Hall). Carow Hall is located off of Shenandoah River Lane across from Presidents Park dorms.
4. Goals & Requirements: This course will give an introduction to game theory concepts, and then focus on the prototypical case of “cooperation versus conflict”, called the Prisoners’ Dilemma. Both traditional and new approaches to this prototypical case will be discussed. Lectures on traditional approaches will use certain chapters from Rassmussen’s text. Lectures on newer approaches will use the set of readings mentioned in topic 2 above. Problem sets will be given to provide practice on key concepts and feedback on students’ understanding. A midterm will be given, and a comprehensive final exam will also be given. Students also need to have background in econometrics and/or probability & statistics classes, because most topics will use probability concepts extensively.
5. Content & Instruction Methods: Most classes will be a mixture of lecture and discussion. Student comments and questions are encouraged and recommended for everyone’s benefit (for more enjoyable and better understood ideas).
6. Tests & Evaluation Methods: No numerical scores are given for problem sets, only a check mark for turning in on time. So you cannot lose points on the problem sets. They are only to help you prepare and do well on the midterm and final exam.

The midterm and final exams are worth 40% and 50% respectively. However, if your final exam score exceeds your midterm score by more than 10%, then the final exam will be weighted 70% of the total grade. Problem sets are worth 10% of the final grade. To receive the 10%, you must complete all the problem sets, with no more than 2 late. Problem sets are due the next class period after they are passed out.

Also, if you are a student with a disability and you need academic accommodations, please see me and contact the disability Resource Center (DRC) at 703-993-2474. All academic accommodations must be arranged through that office.

7. Getting Started: Read Chapter 1 of Rassmussen’s text. We will begin by introducing the basic idea of strategic behavior in games, in contrast with “price taking” behavior in perfectly competitive economic systems. Next we will discuss key game theory concepts like: actions versus strategies, players, payoff functions, strategic form payoff matrices, extensive form game trees, Nash equilibrium, dominant strategies, mixed strategies, behavioral strategies, perfect versus imperfect information, sequential versus simultaneous games, and so on. We will illustrate these concepts with a number of simple games, including key representative games about “cooperation” versus “conflict” situations, including the prisoner’s dilemma, and other games such as: pure coordination, chicken, battle of the sexes, etc.