

STAT/ECON 474 Game Theory
Midterm 1 Study Guide

- The first midterm is on Tuesday February 26
- The exam will cover Chapters 1–7.
- There is a reading guide on the webpage explaining which material you are responsible for in each chapter.
<http://www.math.uic.edu/~marker/stat473-F19/reading.html>
- You will have the full 75 minutes for the exam, but I expect most will finish in an hour or less.
- There is a week-by-week syllabus on the webpage:
<http://www.math.uic.edu/~marker/stat473-F19/wtw.html>
- The web page has some notes on decisions with a single decision maker, the relationship between Nash equilibrium and IDSDS solutions, Cournot-Nash equilibrium and auctions (only the beginning of the auction notes are relevant now).
 - One of the best ways to study is to do the *Check Your Understanding* problems in the text.
- **Most** of the exam problems will be similar to the problem sets and practice problems, but there will also be several short answer questions like the ones on earlier exams.

Sample Short Answer Questions:

- 1) Consider a two player game where A_i is the set of actions available to Player i and v_i is Player i 's payoff function. Give complete definitions of the following concepts.
 - a) The strategy profile (a^*, b^*) is a *Nash equilibrium*.
 - b) The strategy a^* for Player 1 *strictly dominates* the strategy a .

2) Decide if the following are TRUE or FALSE. If FALSE give an example showing the statement is FALSE.

- a) A pure Nash equilibrium will never use a weakly dominated strategy.
- b) If (a^*, b^*) is the unique IDSDS solution to a game then it is a Nash equilibrium.
- c) A Pareto optimal solution is always a Nash equilibrium.