EC 308: Game Theory

Course Material:

- A. Dixit and S. Skeath, *Games of Strategy*, Norton.

- P. Young, *Equity*, Princeton University Press.

- Lecture notes.

Grading: Grades will be based on 4 quizes (10%), two midterms (30% and 30%), and a final exam (30%).

Course Outline:

- Part 1: Strategy
  - Introduction to Strategy
  - Extensive Form Games
  - Sequential Games and Backwards induction (
  - Simultaneous Games, Dominant and Dominated Strategies, Nash Equilibrium
  - Nash Equilibrium and Subgame Perfect Nash Equilibrium in Extensive Form Games
  - Repeated Games
  - Mixed Strategies
  - Cooperation and Coordination
  - Voting
  - Incentives

- Part 2: Equity

  - Introduction to Equity

  - Equity and Priority

  - Apportiontment

  - Claims Problems

  - Cost Sharing

Prisoner's Dilemma

Consider the following scenario: There are two prisoner's who are questioned in seperate rooms. The two prisoners jointly committed a crime. If they both confess the crime they will each receive 10 years in prison. If they both deny then they will each receive 3 years. If one confesses and the other denies the prisoner who confesses will receive only 1 year while the other one will receive 25 years. Each prisoner only cares for getting a sentence as mild as possible and nothing else. What should they do?

		P2	
		Confess	Deny
P1	Confess	10 years, 10 years	1 year, 25 years
	Deny	25 years, 1 year	3 years, 3 years

The Price is Right

Consider the following game. There are three contestants who are trying to guess the price of a laundry detergent. The contestant who guesses the price to the nearest penny without exceeding will get $ 10,000. The others will get the laundry detergent. The contestants *sequentially* make their guesses.

- The first contestant's guess is 75 cents

- The second contestant's guess is 145 cents, and

- The last contestant's guess is 210 cents.

What is wrong here?

Cost Sharing

Two homeowners A and B need to connect their houses to the existing power line.

- Connecting only the house of A costs $200

- Connecting only the house of B costs $400

- Connecting both houses costs $450

Since there are gains from cooperation they should connect both houses.

How should they share the joint costs?

- Proportional cost sharing?

- What about sharing the savings equally?