# Timeline

### 1:10-1:20 (10 minutes) lead by Linfeng and Chen

* **Introduction and Author Overview**
  + Schelling
  + Camerer
  + Easley, D.
  + Kleinberg, J.
  + There are several Nobel prizes for work in Game Theory
* **Learning Goals**
  + Being able to represent strategic situations as games
  + Identify strategies
  + Strategy profiles and payoffs
  + Identify common classes of games (cooperation, coordination, zero-sum)
  + Solve games using iterated deletion of strictly dominated strategies
  + Solve games using Nash equilibrium
  + Become aware of Nash existence theorem (NE exists but might need mixed strategies)
  + Many other classes of games we don’t study – extensive form or dynamic games

### 1:20-1:50 (30 minutes) lead by Tanya (Linfeng and Chen)

* **A short game about the Game Theory:**
  + ‘Guess the number’
* **Some important Games**
  + Zero-Sum Games
  + Battle of the Sexes (a coordination game)
  + Chicken or Hawk versus Dove (an anti-coordination game)
  + Prisoner’s Dilemma (a cooperation game)
* Answer questions about the structure of these Games

For the set of four games with simple payoffs:

* + (Re)-Name the strategies verbally ==> to make them meaningful;

Plan:

a) Split 12 people into 2 groups;

b) Give unspecified opponent strategies (don't pair people into groups of two)

c) Draw the demo of the games on the board, and keep recording people's choice in their role.

d) Rise hands and document on board, for each game.

\* Goal here: to demonstrate the types of games and how they fit into strategic situations.

### 1:50-2:20 (30 minutes) lead by Tanya

* **Lecture based on "Networks, Crowds, and Markets"**
  + Solution concept: **Iterated Deletion**

1. Revisit Prison Dilemma result, and motivate the idea of iterated deletion

2. Demonstrate the long game with 4\*4 matrix, through applying the method of iterated deletion of dominated strategies.

3. Introduce the coordination game (game of sex, for example), where multiple equilibria co-exists.

==> To motivate the idea of Nash equilibrium after the break.

### 2:20-2:30 (10 minutes)

* Break

### 2:30-2:50 (20 minutes) lead by Tanya

* **Lecture based on "Networks, Crowds, and Markets", continued.** 
  + Solution concept: **Nash Equilibrium**

### 2:50-3:10 (20 minutes) lead by Tanya

* **Tacit Coordination Games**, an example with **7 equilibria**.
  + Solve and explain

### 3:10-3:30 (20 minutes) lead by Tanya (Linfeng and Chen)

* **Discussion about ‘Behavioral Game Theory’**

### 3:30-3:40 (10 minutes) lead by Linfeng and Chen

* **Lecture and Discussion about ‘Bargaining, Communication, and Limited War’**

Schelling's piece: discussion questions

1. How would communication affect the structure of the game?

2. How would the number of equilibria affect strategic decision making?

Any other way of eliminating possible confusions?

(For example: credible through will reinforce a unilateral strategy)

3. etc

### 3:40-3:50 (10 minutes) lead by Linfeng and Chen

* Open Question

Comments on what have been missing in the theoretical context of Game Theory:

1. How unrealistic they are!

1) simultaneous move game is not valid upon communication;

2. Yet, there are more forms of games available:

\* repeated game,

\* sequential games

\* etc.

### 3:50-4:00 (10 minutes) lead by Linfeng and Chen

* Reflection