Module Guide
Mechanism Design

Mustafa Warsi

If game theory is the study of optimal decision-making by agents given a set of resources, utilities, and constraints, [i.e. given a decision architecture, how should agents behave?] then mechanism design is the study of the *inverse* problem, namely, given a set of desirable behaviours, how do we design a decision architecture so that agents playing this game converge to the desired behaviour?

i.e if microeconomics is the science of predicting the behaviour of optimising agents, then mechanism design is an attempt to *engineer* that behaviour.

We will first specify motivating cases, then lay out the theoretical foundations of the field in the abstract, go through some results, and then see what they can teach us about those case studies.

Course Description

The course will be split into two semesters:

1. The Forward Direction [i.e. Game Theory]
2. The Backward Direction [i.e. Mechanism Design]

Each semester will have in it 3 seminars:

1. Foundations
2. Case Studies
3. Solutions

How to Participate

1. *Send Me an Email*
   In order to sign up for this course, you will first have to outline in 1 [brief] paragraph what you hope to gain from this course, what your mathematical background is, and importantly where you hope to apply this knowledge. You can reach me at: mnw26@icloud.com

2. *Join the Whatsapp Group*
   Once we have had a brief discussion about your aims, you will be invited to a WhatsApp group for further coordination and discussion. You can join here: https://chat.whatsapp.com/K8q5aCzcEiqAKj73Y9taOP

3. *Attend the Monthly Seminars*
   We will have monthly seminars to discuss the Course Content [i.e. 3 in the Fall Semester, 3 more in the Spring Semester]. They will be at the London College of Political Technology.
   Schedule TBC.

4. *Find me during Office Hours*
   Office Hours will be on Wednesday evenings at the LCPT from 2000 to 2200. Alternatively, feel free to message any thoughts or questions to me over WhatsApp.

Reading

1. Eric Maskin's Nobel Prize Lecture
2. Introduction to Game Theory
3. Mishra's Introductory Notes on Mechanism Design
4. Mark Braverman's Overview of Mechanism vs Algorithm Design
5. The Revelation Principle in Mechanism Design