

## **Mechanism Design**

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This course aims to introduce the students to the theory of mechanism design. The setting usually assumes that there is a planner who designs a market where several agents participate. The outcome of the interactions of the agents depends on the mechanism and the planner is interested in achieving some specific goals in this regard. The actions of the agents typically depend on some private information (or type) they possess. The agents are strategic and often use the private information to align the outcomes of the game to their interests. A crucial element in such a setting is the information structure. The planner has the freedom to choose any market so that the outcomes obtained through the strategic interactions amongst the agents yield her desirable outcome, given the information structure. The planner in general would be interested in achieving an outcome that is based on the types of all the agents, i.e. an aggregation of the types or preferences. After setting the basic model we will discuss various solution concepts using the game theoretic tools. We will discuss various preference aggregation rules for the planner that are compatible with different solution concepts.

The examples of mechanism design are aplenty. We will start with the basic model of auctions where a seller wants to maximise her expected revenue. Next we will discuss the classic problem of public goods provision followed by the matching problems. In an auction model the seller would like to trace the valuations of the bidders and in public goods provision the planner needs to decide if a public good or service could be provided efficiently. In matching the planner aims to design a mechanism that integrates the preferences of two parties (in two sided matching) such as men and women in a marriage market or an assignment problem where indivisible products are assigned to a set of agents.

The last part of the course will briefly introduce the idea of information design and discuss basic examples. We will finish the course with the latest research topics in mechanism design literature.