Learning objectives

Students will learn how to model and solve intertemporal decision-making problems. We will study problems with one (dynamic optimization) or more (dynamic games) decision-makers, paying attention to the differences between finite and infinite-horizon. The course will also cover models with general time preferences (non-constant or hyperbolic discounting and heterogeneous discounting). Contents will be introduced by means of classical literature papers where dynamic optimization techniques have been used to study economic problems. The main course objective is to provide and develop the modeling skills.

Contents

1. One decision maker models: classical economic models. Finite and infinite horizon problems.

   (Here we will study the seminal models of Hotelling (natural resource economics), Ramsey (economic growth) and Jorgenson (public economics/theory of the firm) and extensions of them).

2. One decision maker models: extensions. Generalized time preferences, discounting functions and time consistent solutions.

   (Here we will depart from the seminal Strotz’s (1956) paper to the papers of Barro (1999) and Karp (2007))


   (Here we will study the Lancaster model, R&D models and natural resource economic models).
**Bibliography**


**Assessment**

There will be

1) a set of problems during the semester that students will have to solve (individually) and hand in at the requested date (they will consist of 3-5 problems to solve and develop) as well as

2) a final public presentation of a paper from a selected list.

*Each part will account for the 50% of the final qualification.*