

Indian Institute of Technology Kanpur

ECO 724A: Dynamic Macroeconomics

Syllabus

The various dimensions of this course are outlined below. However, due to the dynamic situation we are all living in, some components (especially course assessment) might change at a short notice.

I. Course Overview

This course is designed for PG students to equip them with dynamic programming principles and techniques. The goal is to teach mathematical principles that are common in various sub-fields of modern macroeconomics through standard macroeconomic models. This will help students to handle and work with cutting edge research that uses these techniques and answer relevant macroeconomic questions. Moreover, a constant theme throughout the course will be the use of microfounding behaviour of economic agents that is absent in introductory macroeconomics.

Pre-requisites

Knowledge of introductory microeconomics, macroeconomics and mathematical economics is essential. We will use differential calculus and Lagrangian multipliers throughout the course. It is strongly advised students familiarize themselves with these concepts.

II. Textbooks

1. Macroeconomics, by Gregory Mankiw, eight edition, Worth Publishers (For Section 1 below)
2. Recursive Macroeconomic Theory, by Lars Ljungqvist and Tom Sargent, MIT Press, fourth edition, 2018. (For section 2-5 below).

3. Economic Growth, by Robert J. Barro and Xavier I. Sala-i-Martin, MIT Press, second edition, 2003. (For section 6 below).

III. Syllabus

Topic	Suggested number of lectures
1. Review of AD-AS, Solow growth model	5
2. Competitive equilibrium in Consumption-Saving models	3
3. Introduction to Dynamic Programming <ul style="list-style-type: none"> a. Neoclassical Growth model – social planner b. Value Function Iteration c. Competitive equilibrium formulation 	6
4. Equilibrium with Complete Markets	3
5. Self-Insurance and Incomplete Markets <ul style="list-style-type: none"> a. Non-stochastic endowment model with borrowing constraints b. Precautionary savings and prudence c. Determinacy in income fluctuation problems 	5
6. Continuous Time Growth Theory <ul style="list-style-type: none"> a. Ramsey-Cass-Koopman Model b. Solow Model, Kaldor Facts 	5