

Dynamic Optimization

Wuhan University

Spring, 2022

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Office: 经管院 C151

Class Room: 枫-210

Class Hours: Tuesday 14:05 - 16:30 (6 - 8 节)

Duration: February 15 - May 31 (Week 1 - 16)

Course Description

This course provides undergraduate students with foundation knowledge in dynamic optimization. Topics include Lagrange's Method, Concave Programming, Uncertainty and Dynamic Programming, etc. Both mathematical derivation and economic intuition will be emphasized.

Course Materials

- Textbook: Avinash K. Dixit, Optimization in Economic Theory. Oxford University Press, 1990.
- Course Website: <https://xhu.github.io/teaching/optimization2022>

Assessments

The grade will count the assessments using the following proportions:

- Assignments: 20%
 - There will be 5 assignments in total.
 - We will use QQ group to collect assignments.
- Midterm Exam: 30%
 - Tentative Date: April 19 (Week 10), in-class
- Final Exam: 50%
 - Tentative Date: May 31 (Week 16), in-class

Schedule

The schedule is tentative and subject to change.

Week 01, 02/15 : Introduction & Lagrange's Method

Week 02, 02/22 : Extensions and Generalizations

Week 03, 03/01 : Shadow Prices

Week 04, 03/08 : Maximum Value Functions

Week 05, 03/15 : Convex Sets and Their Separation

Week 06, 03/22 : Concave Programming

Week 07, 03/29 : Second-Order Conditions

Week 08, 04/05 : No Class (Ching Ming Festival)

Week 09, 04/12 : Uncertainty

Week 10, 04/19 : Mid-term Exam

Week 11, 04/26 : Optimal Control

Week 12, 05/03 : Optimal Control

Week 13, 05/10 : Optimal Control

Week 14, 05/17 : Dynamic Programming

Week 15, 05/24 : Dynamic Programming

Week 16, 05/31 : Final Exam