

FIN-615

**Dynamic Asset Pricing**

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Cursus	Sem.	Type
Finance		Obl.

Language of teaching	English
Credits	3
Session	
Exam	Written
Workload	90h
<b>Hours</b>	<b>28</b>
Lecture	28
<b>Number of positions</b>	

**Frequency**

Every year

**Remark**If you would like to attend this course, please send an email to: [edfi@epfl.ch](mailto:edfi@epfl.ch) to register**Summary**

This course provides an advanced introduction to the methods and results of continuous time asset pricing

**Content**

This course provides an advanced introduction to the methods of continuous time asset pricing. Topics will include no--arbitrage restrictions on assets prices, stochastic control methods for consumption and portfolio choice, complete and incomplete equilibrium models, and an introduction to the modeling of certain frictions.

A tentative outline of the course is as follows:

**Lecture 1:** The market model

- Information Structure
- Price Dynamics
- Arbitrage and Admissible trading strategies
- The fundamental theorems of Asset Pricing

**Lecture 2 :** Portfolio and consumption choice in complete markets

- The dynamic programming approach
- The static budget constraint
- The Martingale Approach
- The Myopic Portfolio
- Hedging Demands

**Lectures 3 and 4:** Equilibrium models

- The Lucas Model
- The CCAPM
- Multiple Stocks and Market Completeness
- Multiple Goods Economies
- Production economies
- Multiple Agents: Aggregation and the Representative Agent

**Lecture 5:** Stochastic control and HJB equations

- The dynamic programming principle
- Verification theorems in finite and infinite horizon
- Merton's problem
- Explicit Solutions

**Lecture 6:** Incomplete information and learning

- Incomplete vs. Asymmetric Information
- Filtering in continuous-time
- Impact on Asset Prices

**Lecture 7:** Topic to be decided in class among the following choices:

- Portfolio constraints
- Search markets of decentralized trading
- Transaction costs
- Asset pricing bubbles

**Keywords**

Asset pricing, general equilibrium, optimal portfolios, optimal stochastic control, asset pricing frictions

**Learning Prerequisites****Required courses**

- FIN 415: Stochastic calculus
- FIN 609: Asset pricing

**Important concepts to start the course**

- Foundations in probability theory and statistics
- Working knowledge of stochastic calculus
- Working knowledge of discrete asset pricing

**Learning Outcomes**

By the end of the course, the student must be able to:

- Construct an equilibrium asset pricing model
- Solve a stochastic control problem using verification
- Solve a portfolio and consumption choice problem using the martingale method
- Describe the key theoretical asset pricing puzzles

**Transversal skills**

- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Continue to work through difficulties or initial failure to find optimal solutions.
- Demonstrate the capacity for critical thinking

**Teaching methods**

Lectures and weekly Problems sets based on research papers.

**Expected student activities**

- Class attendance
- Weekly readings
- Weekly problem sets

### **Assessment methods**

- Problem sets 30%
- Final exam 70%

### **Resources**

#### **Bibliography**

A complete list of references will be distributed to students in the first week of the course.

#### **Moodle Link**

- <https://go.epfl.ch/FIN-615>