



AI2153 Financial Economics with Real Estate Applications 7.5 credits

Finansiell ekonomi med fastighetstillämpningar

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The course syllabus is valid from Autumn 2025 according to decision of the Director of First and Second Cycle Education: HS 2025-0695, 3.2.2 Decision date: 2025-04-08

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

The Built Environment

Specific prerequisites

Knowledge in financial economics equivalent to the content in the course AI2135.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

Upon completing the course, students should have a deep understanding of financial economics with applications in real estate and be able to analyze financing solutions, investments, and risks in the real estate sector.

After passing the course, students should be able to:

Knowledge and Understanding

- Explain fundamental theories and concepts in real estate financing and investment.
- Describe how interest rates, bonds, interest rate derivatives, credit risk, and interest rate risk affect the real estate market.
- Outline financing options for residential and commercial properties and analyze financial leverage and capital structure.
- Understand property valuation methods, land valuation, and investment analysis, including real options and risk analysis.
- Explain the function of capital markets and various instruments such as securitization, REITs, and alternative asset classes.
- Describe current strategies and trends in real estate economics, such as tokenization, ESG factors, and behavioral finance.

Skills and Abilities

- Analyze and compare the risk and return of different financing solutions for real estate investments from both borrower and lender perspectives.
- Apply investment analysis methods to evaluate direct and indirect real estate investments.
- Calculate optimal asset allocations with real estate as part of a diversified portfolio.
- Identify and evaluate advanced strategies such as real estate syndication, hedging strategies, and scenario planning.
- Analyze technological developments in the real estate sector (e.g., PropTech, AI, and tokenization).

Evaluation ability and approach

- Independently assess how financing and investment decisions affect the real estate market, considering risk, return, and sustainability.
- Reflect on ethics and responsibility in real estate financing and investment, particularly in relation to ESG factors and regulations.
- Evaluate how actors in the real estate and financial markets contribute to sustainable economic, environmental, and social development.
- Reflect on the role of AI in the real estate industry and the ethical aspects of automated processes.

Course contents

Fundamentals of Financing and Risk Management

- Interest rates (fixed and floating), bonds, and interest rate derivatives
- Credit risks and interest rate risks
- Residential mortgages and commercial real estate loans
- Financial leverage and capital structure

Real Estate Investment and Valuation

- Net operating income and yield
- Property valuation and land appraisal
- Investment analysis and real options
- Risk analysis

Capital Markets and Portfolio Theory

- Securitization of real estate
- REITs and publicly traded real estate stocks
- Optimal portfolio theory and asset allocation
- Alternative asset classes in real estate

Advanced Strategies and Trends

- Property and land valuation using AVM (Automated Valuation Models)
- Private equity and real estate syndication
- Tokenization and digital assets
- Hedging strategies and scenario planning
- ESG, regulations, and macroeconomic factors

Technological Development and Behavioral Finance

- PropTech and AI in the real estate sector
- Behavioral finance and speculative market behavior
- International real estate investments

Examination

- INL1 - Assignment, 3.0 credits, grading scale: P, F
- TEN1 - Written Exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.