Linnæus University

Dnr: LNU-2025/1633

Course syllabus

School of Business and Economics
Department of Economics and Statistics

1NA026 Fördjupad nationalekonomi I, 30 högskolepoäng
Intermediate Economics I, 30 credits

Main field of study
Economics

Subject
Economics

Level
First cycle

Progression
G1F

Date of Ratification
Approved 2024-02-05.
Revised 2025-06-09. Literature.

The course syllabus is valid from autumn semester 2025.

Prerequisites
Economics 30 credits and Statistics 15 credits, or the equivalent. English 6, or the equivalent.

Objectives

Module 1: Essential mathematics for business and economics, 7.5 credits
After completing this module the student should be able to:

- solve optimisation problems for continuous functions with one or more variables, with and without constraints
- solve integral problems
- conduct simple analyses in linear algebra

- conduct basic financial calculations with compound interest, present value and internal rate of return

Module 2: Econometrics, 7.5 credits
After completing this module the student should be able to:

- explain and describe regression models (simple and multiple), their properties and inference
- identify, explain and solve for problems such as heteroscedasticity, autocorrelation and multicollinearity
- explain and interpret time series models such as AR and ARCH models
- explain and identify Granger-causality, (non-)stationarity and co-integration
- apply regression models to estimate and analyze economic relationships
- explain the possibilities and limitations associated with different data when using regression analysis
- explain and understand the intuition of the most common statistical methods to isolate causal effects
- interpret results in written and oral form from a regression analysis
- use statistical software to perform data processing and estimation

Module 3: Uncertainty and strategic decision making, 7.5 credits
After completing this module the student should be able to:

- define and explain different economic concepts of uncertainty
- decide about and motivate appropriate uncertainty concepts in economic applications
- analyse strategic situations using game theory and other analytical methods
- critically discuss the assumptions made when analysing strategic situations
- critically discuss the reliability of the results obtained from strategic analysis

Module 4: Economic growth and business cycle, 7.5 credits
After completing this module the student should be able to:

- explain and apply economic models for long-term economic growth.
- describe the features of inflation in the long-run
- analyze the effects of different types of economic shocks on aggregate demand, production, inflation, unemployment in the short-run
- apply economic models to analyze how the central bank conducts a systematic economic policy

Content

Module 1: Essential mathematics for business and economics, 7.5 credits
The module contains:

- functions of one or more variables
- total and partial derivatives
- integrals (including integration by parts)
- concavity, convexity and second-order conditions
- constrained and unconstrained optimisation
- compound interest, present value, internal rate of return
- linear algebra (vectors, determinants, inverse)

Module 2: Econometrics, 7.5 credits
The module contains:

- ordinary Least Squares
- model specification and diagnostics testing
- dynamic econometrics models
- causality and instrumental variables
- identification, estimation, diagnostic testing and prediction of ARIMA models

Module 3: Uncertainty and strategic decision making, 7.5 credits
The module contains:

- game-theoretical concepts and solution methods under uncertainty
- economic concepts of uncertainty (e.g., risk, probability, ambiguity, asymmetric information, moral hazard, adverse selection, strategic uncertainty)
- modelling and analysis of uncertainty and strategic decision situations
- economic applications (e.g., price discrimination, insurance, employment contracts, auctions, oligopoly, cost uncertainty)

Module 4: Economic growth and business cycle, 7.5 credits
The module aims to provide enhanced knowledge in macroeconomic theory. The module contains:

- long-run economic growth models and empirical evidence
- the quantity theory of money and the classical dichotomy
- monetary policy and the Phillips Curve
- stabilization policy and the AS/AD framework
- business cycle research

Type of Instruction

Module 1: Essential mathematics for business and economics, 7.5 credits
The teaching consists of lectures and group exercises.

Module 2: Econometrics, 7.5 credits
The teaching consists of lectures, laboratory sessions and tutorials.

Module 3: Uncertainty and strategic decision making, 7.5 credits
The teaching consists of lectures and exercises.

Module 4: Economic growth and business cycle, 7.5 credits
The teaching consists of lectures and exercises.

Examination

The course is assessed with the grades A, B, C, D, E or F.

Module 1: Essential mathematics for business and economics, 7.5 credits
The module is examined through an individual written examination 5.5 credits and an written group assignment 2 credits.

Module 2: Econometrics, 7.5 credits
The module is examined through an individual written examination 5.5 credits, an individual laboratory session 1 credit and an individual written assignment 1 credit.

Module 3: Uncertainty and strategic decision making, 7.5 credits
The module is examined through an individual written examination 5.5 credits and a written group assignment 2 credits.

Module 4: Economic growth and business cycle, 7.5 credits
The module is examined through an individual written examination 5.5 credits and an individual written assignment 2 credits.

The following applies to all modules:
The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail.

The grade of the course is a combined assessment from the grades of the various course modules. The combined assessment is based on the grades and the scope of the course (30 credits). The more extensive a module is, the greater impact it will have on the final grade. Module grades with the grading scale between G-U will not be considered into the combined assessment. However, a G is required for each of the modules in order to receive a final course grade.

Resit examination is offered in accordance with Linnaeus University's Local regulations for courses and examination at the first- and second-cycle levels.

In the event that a student with a disability is entitled to special study support, the examiner will decide on adapted or alternative examination arrangements.

Course Evaluation

A course evaluation should be conducted during the course or in connection with its conclusion. The results and analysis of the completed course evaluation should be promptly communicated to students who have completed the course. Students participating in the next course instance should be informed of the results of the previous course evaluation and any improvements that have been made, no later than at the start of the course.

Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course:
1NA005 with 30 hp.
Module 1: 1NA005:1, 1NA010, 1NA002, 1NA004:1, 1NA070 and 1NA080 with 7.5 credits each.
Module 2: 1NA005:2, 2NA001, 2FE045:2, 1NA004:2, 1NA011, 1NA016:2 and 1NA071 with 7.5 credits each.
Module 3: 1NA005:3, 1NA012, 2NA003, 1NA072 and 1NA082 with 7.5 credits each.
Module 4: 1NA005:4, 1NA013, 2NA006, 1NA073 and 1NA083 with 7.5 credits each.

Required Reading and Additional Study Material

Required reading
Module 1: Essential mathematics for business and economics, 7.5 credits
Sydsaeter, et al. *Essential Mathematics for Economic Analysis*. Pearson. 6th edition. About 200 pages.

Module 2: Econometrics, 7.5 credits
Gujarati, D.N. *Basic Econometrics*. McGraw-Hill. Latest edition. About 900 pages.

Scientific articles and statistics provided by the teacher. About 100 pages.

Module 3: Uncertainty and strategic decision making, 7.5 credits

Varian, Hal R. & Melitz Marc J. *Intermediate Microeconomics with Calculus*. International Student Edition. Norton. Second edition. About 200 pages.

Scientific articles. About 50 pages.

Module 4: Economic growth and business cycle, 7.5 credits
Jones, Charles I. *Macroeconomics*. Fifth edition, International student edition. New York, NY: W.W. Norton & Company. Latest edition. About 350 pages.

Supplementary material may be used.