

**SYLLABUS**

# **Intermediate Econometrics**

## **7.5 credits N0028N**

**Ekonometri**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE**  
**2023-02-15**

# Intermediate Econometrics 7.5 credits N0028N

## Ekometri

### First cycle, N0028N

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	U G VG *	Nationalekonomi	Economics

### Main field of study

Economics

## Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and completed courses of at least 30 credits in Economics with at least the grade Pass. The following courses should be included: Introductory Microeconomics (N0008N) 7,5 credits, Introductory Macroeconomics (N0011N), 7,5 credits, or equivalent. Besides these courses, also general statistical knowledge is required: Basic statistics (S0009M) 7,5 credits and Applied statistics for social scientists (G0018N) 7,5 credits alternatively Data and analysis for economics (N0039N) 7,5 credits, or equivalent. Good knowledge in English, equivalent to English 6.

## Selection

The selection is based on 1-165 credits.

## Course Aim

The overall purpose with the course is that the student shall after the course have basic knowledge in econometrics theory and be able to apply it on current economic problems. In addition, the student shall have a good knowledge and ability to conduct critical analyses of quantitative economic relationships and development patterns. More concretely, this means that the student shall be able to:

### **Knowledge and understanding**

- explain simple regression models, their properties and inference
- explain multiple regression models, their properties and inference
- explain estimation of equations systems (simultaneous equation models)
- explain concepts and problems such as heteroscedasticity, autocorrelation, confident intervals, hypothesis testing and multicollinearity

### **Skills and abilities**

- express oneself proficiently in both writing and in a scientifically correct way
- in writing present econometric results within stipulated time frames
- make relevant hypotheses and specify testable models
- apply simple, multiple regression models and simultaneous equation models to estimate and analyse economic relationships
- present, explain and make understandable, to others within the profession as well as to laymen, econometric results
- explain and use concepts, as well as correct problems, such as heteroscedasticity, autocorrelation, confident intervals, hypothesis testing, multicollinearity and biases

### **Judgement**

- assess, critically scrutinise and discuss model specifications and model results based on economic theory and relationships
- formulate and quantify economic relationships
- motivate model choices and argue/defend its results

## Contents

The course is based on lectures and interspersed with practical computer laboratory exercises. The course is for students that already have basic knowledge in statistics. The course deals with problems to establish and quantify economic relationships and basic econometric methods. Main focus is on linear regression models (OLS). Another important part of the course is its practical computer based exercises. These exercises are conducted using the econometrics software NLogit/LimDep. The following topics are presented in detail:

- a) Review of basic statistical concepts and parameters
- b) The simple regression model and its properties and inference
- c) Linear regression models (OLS)
- d) Multiple regression models and their properties and inference
- e) Heteroscedasticity, autocorrelation, confident intervals and multicollinearity
- f) Dummy variables
- g) Estimation of equations systems
- h) Hypotheses testing

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The course starts with a review of basic statistics and continues with simple and multiple regression models, both in theory and practical applications. Starting from economic theory and economic relationships different model specifications and interpretation of model results are than discussed. In connection to this, the analysis is broadened by the introduction of confidence intervals and hypothesis testing. The course continues with analyses of the consequences if one or several of the underlying assumption of the linear regression model is violated. Concepts and problems such as multicollinearity, heteroscedasticity and autocorrelation is introduced and analysed in conjunction to an extended discussion regarding model specification. The course includes and analysis models which include dummy variables. Large segments of the course are based on computer exercises where the students learn how to practically implement the different models in specialised software and how to use large dataset.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

Exam (T) 6,0 hp U G VG

Computer exercises (L) 1,5 hp U G

The grading of the exam is based on the students' ability to fulfil the specified course aims a) though h) above. The grading of the computer laboratory exercises is based on the students' ability to fulfil the specified course aims e) though l) above. In order to get the grade VG on the course the student need to achieve the grade VG on the exam and G on the computer exercises.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Remarks

Students must register for the courses themselves or contact ETKS educational administration, [eduetks@ltu.se](mailto:eduetks@ltu.se) not later than three days after the quarter commences. Failure to do so can result in the place being lost. This rule also applies to students with a guaranteed place.

## Course offered by

Department of Social Sciences, Technology and Arts

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Written Exam	U G VG *	6	Mandatory	S11	
0002	Laboratory work	U G#	1.5	Mandatory	S11	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Director of Undergraduate Studies Daniel Örtqvist, Department of Business Administration, Technology and Social Sciences 2023-02-15

## Syllabus established

by Head of the Department of Business Administration and Social Sciences 2010-02-19