

## **SYLLABUS**

# **Intermediate natural resource economics 7.5 credits N0035N**

**Nationalekonomi B: Naturresursekonomi och råvarumarknader**

**Course syllabus admitted: Autumn 2019 Sp 1 - Present**

**DECISION DATE  
2019-02-18**

# Intermediate natural resource economics 7.5 credits N0035N

## Nationalekonomi B: Naturresursekonomi och råvarumarknader

### First cycle, N0035N

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	U G VG *	Nationalekonomi	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 basic knowledge in Introductory Microeconomics (N0008N), Introductory Microeconomics (N0030N) or equivalent courses. Good knowledge in English, equivalent to English 6.

## Selection

The selection is based on 1-165 credits.

## Examiner

Jesper Stage

## Course Aim

After completing the course, the student should be able to

- Describe verbally, graphically and mathematically what is meant by optimal extraction of non-renewable natural resources over time.
- Explain the concept of resource scarcity, as it applies to non-renewable natural resources, from a physical as well as an economic perspective.
- Analyze verbally, graphically and mathematically how the optimal extraction rate over time of a non-renewable natural resource is affected by changes in the discount rate, availability of the resource, technology, competition, market demand, and different policy variables.
- Explain, verbally and graphically, key characteristics of markets for minerals, metals and energy minerals such as oil.
- Describe how tax policy, institutional arrangements and policies affect the mineral and metal industries.
- Describe verbally, graphically and mathematically what is meant by optimal extraction of renewable natural resources such as marine and forest resources
- Explain verbally, graphically and mathematically what is meant by biological growth functions, maximum sustainable yield, and optimal rotation times for renewable natural resources.
- Analyze verbally, graphically and mathematically how the optimal extraction rate over time of a renewable natural resource is affected by changes in the discount rate, availability of the resource, technology, competition, market demand, and different institutional conditions and policy variables.
- Explain, verbally and graphically, key characteristics of the markets for forest and paper products.
- Describe and explain, graphically and mathematically, optimal land use both with perfect markets and institutions as well as with incomplete markets for inputs and/or outputs, incomplete credit and insurance markets and incomplete markets for agricultural land.
- Explain, verbally and graphically, key characteristics of the markets for agricultural products.
- Describe how institutional arrangements and agricultural policy affect markets for agricultural products.
- Find and identify key scientific works, summarize key findings and conclusions from these in writing, and use these findings and conclusions to analyze current natural resource issues

## Contents

The course consists of three different components:

Non-renewable natural resources:

Extraction of non-renewable natural resources such as minerals, oil, etc., and how markets for minerals and metals function.

Renewable natural resources:

Extraction of renewable natural resources such as forests and marine resources and how markets for forest materials function.

Agricultural economics

Land use with perfect and incomplete markets. Institutional theory. Markets for agricultural products.

More specifically, the following concepts will be covered:

Non-renewable natural resources

- Discounting.
- The Hotelling model for optimal extraction of non-renewable natural resources.
- Different resource concepts, physical as well as economic, and the concept of resource scarcity.
- Supply and demand factors in mineral and metal markets such as side and complementary products and recycling
- Analysis of competition and costs
- Demand in the short and long run (Intensity of use)
- Pricing in mineral markets
- Tax policy and mineral policy

Renewable natural resources

- Models for optimal extraction of renewable natural resources. Steady state models for growth of renewable natural resources. Models for single rotation and for optimal rotation time over infinite horizons in forestry
- Supply and demand factors in forest and paper markets such as price formation, trade barriers, substitution effects, logging decisions, etc.
- Institutional arrangements and policies affecting the use of renewable natural resources.

Agricultural economics

- Models for optimal land use
- Effects of market failure in markets for crops, insurance, credit and inputs.
- Institutional arrangements and agricultural policy and their effects

## Realization

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

Lectures, seminars, written assignments.

The course is if necessary given in English.

## 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. Written exam 4.5 ECTS, seminars 1.5 ECTS and written assignment(s) including presentation 1.5 ECTS.

## Remarks

Students must register to the courses themselves or contact the 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 also applies to the students with a place guarantee.

## Literature. Valid from Spring 2018 Sp 3

Bostedt, Göran (2013). Naturresurs- och skogsekonomi. Studentlitteratur. ISBN: 978-91-44-08070-3 (for Swedish speaking students)

Alternatively the following English text book could also be used: Perman, Roger., et al. (2011). Natural Resource and Environmental Economics. 4th ed. Addison-Wesley. ISBN: 978-0-321-41753-4. (I.e. students can select either the textbook by Bostedt OR Perman).

Ellis, Frank. (1993). Peasant Economics – Farm households and Agrarian Development. Cambridge Press. ISBN: 0-521-45711-4.

Distributed material.

## 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 *	4.5	Mandatory	A16	
0002	Seminars	U G#	1.5	Mandatory	A16	
0003	Written assignment and oral presentation	U G#	1.5	Mandatory	A16	

## 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 2019-02-18

## Syllabus established

by Director of Undergraduate Studies Bo Jonsson, Department of Business Administration, Technology and Social Sciences 2016-02-15