

## 2018 NOVA-PhD Course

### Advanced Production Economics

(3 ECTS)

<b>Date</b>	<b>Deadline</b>	<b>Subject</b>
Monday May 28-Friday June 1	April 16	Economics
<b>Location</b>	<b>Distance</b>	<b>Language</b>
SLU – Uppsala	No	English

#### **Course Organizer**

Department of Economics  
Swedish University of Agricultural Sciences  
Yves Surry, email: [yves.surry@ekon.slu.se](mailto:yves.surry@ekon.slu.se)

#### **Prerequisites**

M.Sc. or equivalent studies in economics, agricultural economics, farm management, and environmental economics. Undergraduate courses in microeconomic theory and calculus are required.

#### **Objective**

The objective of this course is to expose PhD level students to the foundations of modern production economics theory. Students will acquire skills and necessary knowledge to address and deal with production-related problems through the use of theoretical and/or analytical tools from the microeconomic theory of the firm. We will also illustrate how to apply these production theory related tools to empirical and practical cases related to firm's production decision making processes.

#### **Content**

##### Lectures

The course focuses on the modern microeconomic theory of the firm based on the notion of the primal and dual representation of production technology. For the primal, we start with single output technologies and the production function and then we consider functional representation for multi-input and multi-output technologies such as transformation and input and output distance functions. For the dual, we consider the cost, revenue and profit functions. Then we proceed with indirect representations of technology, both primal and dual, which are particularly useful when production units face budget or sales constraints. Last but not least we consider the directional distance functions. In all these cases, we pay special attention to the theoretical properties of the underlying functions and we show how we can use them to analyze the structure of production by means of returns to scale, various forms of the elasticity of substitution, shadow prices and of course, comparative statics results. The last part of the course is devoted to the application of these theoretical tools to empirical analysis. In particular, we consider estimating a production function or a system of cost, revenue or profit functions equations by means econometric methods.

## Post-campus Assignments

After the course, registered students will receive assignments including problem-solving exercises on production economics. This is intended to prepare students for the take-home exam.

## **Examination**

To successfully complete the course students have to write a take-home exam that will be scheduled two weeks after the course.

## **Literature**

### Recommended Textbooks

Chambers, R.G. *Applied Production Analysis: A Dual Approach*, Cambridge Univ. Press, 1988.

Fare, R. and D. Primont *Multi-Output Production and Duality: Theory and Applications*, Kluwer Academic Publishers, 1995.

### Background Material

Beattie, B.R., Taylor, C.R. and M.J. Watts. *The Economics of Production*, 2<sup>nd</sup> Edition, Krieger Publ. Co., 2009.

## **Registration**

Register by sending an email to Emma Arias Olsson ([ekon-adm@slu.se](mailto:ekon-adm@slu.se)).  
Deadline is April 16, 2018.

### Signing up for the course:

Max 37 participants:

Nova Students; Max 22 students

Bova students: Max 2 students

### Costs:

	Participation fee	Meals	Accommodation
Nova students <sup>1</sup>	None	Stipend of 30 Euro per day	Student's residence (upon availability)
Bova students <sup>2</sup>	None	Stipend of 30 Euro per day	
Other students	200 Euro	At the charge of the student	Hotel accommodation (up to 120 Euro/night)

For more information on registration and other organizational matters: contact Emma Arias Olsson ([ekon-adm@slu.se](mailto:ekon-adm@slu.se)).

## **Additional Information**

Teacher: Prof. Giannis Karagiannis (University of Macedonia, Greece) in collaboration with Prof. Erik Romstad (Norwegian University of Life Science, Norway) and Prof. Timo Sipilainen (University of Helsinki, Finland)

---

<sup>1</sup> NOVA universities: Aarhus University, Science and Technology; University of Helsinki, Faculty of Agriculture and Forestry; University of Eastern Finland, School of Forest Sciences; Agricultural University of Iceland; Norwegian University of Life Sciences and Swedish University of Agricultural Sciences.

<sup>2</sup> Estonian University of Life Sciences; Latvia University of Agriculture and Aleksandras Stulginskis University.

## Course Outline

1. Primal Representation of Production Technology:
  - a. Production Function
  - b. Transformation Function
  - c. Input Requirement Function
  - d. Input and Output Distance Functions
  
2. Dual Representation of Production Technology:
  - a. Cost Function
  - b. Revenue Function
  - c. Profit Function
  
3. Indirect Primal and Dual Representation of Production Technology:
  - a. Indirect Production Function
  - b. Indirect Input and Output Distance Functions
  - c. Revenue and Cost Constrained Functions
  
4. Directional Distance Functions
  - a. Directional Input and Output Distance Functions
  - b. Directional Technology Distance Function
  
5. Applied Production Analysis:
  - a. Estimation of Cost and Profit Function System of Equations
  - b. Estimation of Production Functions