

2. Course descriptions

Part II

Focused Basics

Study Program	Master of Food and Resource Economics
Course	Microeconomics
Code	G-2.1
CP	6
Class	Microeconomics
Code	G-2.1
Semester	1
Coordinator	Prof. Dr. Thomas Heckelei
Instructor	Prof. Dr. Thomas Heckelei
Language	English
Course relevance	Compulsory subject - Annex 1B: Focused Basics
Teaching concept: hours/week	Lecture/ Exercise, 4 hours/week
Workload	Class 60 h Own studies 120 h
CP	6
Recommended Requirements	
Objectives/Competences	<p>At the end of the course students will have acquired theoretical and applied competence in the neoclassical theory of supply, demand and markets at a formal mathematical level.</p> <p>Specifically, the students are able to formulate and solve unconstrained and constrained optimization problems. They also acquire competence in using spreadsheet tools for economic modelling.</p>
Content	Course structure on the next page
Type of Examination	Written exam.
Literature	<p>VARIAN (1992): Microeconomic Analysis. 3rd edition, Norton.</p> <p>PINDYCK, R.S., and D.L. RUBINFELD: Microeconomics. 6th edition, Prentice Hall.</p> <p>Wainright, K, and A.C. Chiang : Fundamental Methods of Mathematical Economics, Mc Graw-Hill</p> <p>Just, R.E., D.L. Hueth, and A. Schmitz (2004): The welfare economics of public policy: a practical approach to project and policy evaluation. Edward Elgar.</p>

Objective

At the end of the course students will have acquired theoretical and applied competence in the neoclassical theory of supply, demand and markets at a formal mathematical level.

Content

1. Supply and factor demand
 - Production technology
 - Profit maximization
 - Cost minimization
2. Consumer demand
 - Preferences
 - Utility maximization
 - Expenditure minimization
3. Markets
 - Price formation for different time horizons
 - Introduction to game theory
 - Monopoly, Oligopoly
4. Introduction to information theory
 - Expected utility
 - Principal-Agent problem
5. Primary factor use
 - Labour
 - Capital
 - Land
6. Benefit-Cost Analysis of market policies
 - Economic Efficiency in production, consumption, and production structure
 - The distribution problem
 - Consumer rent and variations
 - The benefit-cost approach of evaluating market policies

Study Program	Master of Food and Resource Economics
Course	Quantitative Techniques for Planning and Decision Making
Code	G-2.2
CP	6
Class	Quantitative Techniques for Planning and Decision Making
Code	G-2.2
Semester	1
Coordinator	Prof. Dr. Gerhard Schiefer
Lecturer	Prof. Dr. Gerhard Schiefer, PD Dr. Ralf Helbig
Language	English
Course relevance	Compulsory subject - Annex 1B: Focused Basics
Teaching concept: hours/week	Lecture/Exercise 4 hours/week
Workload	Class: 60 h Own studies: 120 h
CP	6
Recommended Requirements	
Objectives/Competences	Participants are able to identify and typify decision problems and to link them with suitable quantitative planning techniques. They are able to model reality, to integrate models into decision systems and to identify problem solutions through these systems
IContent	Presentation of quantitative techniques of Operations Research and the utilization of techniques in problem scenarios of the agri-food sector. Course structure on the next page
Type of Examination	Written exam
Literature	Parts from Hanf, Schiefer, Planning and Decision in Agribusiness, Elsevier as well as from OR textbooks like Hillier, Lieberman, Introduction to Operations Research, Holden Day; Winston, Albright, Practical Management Science, Duxbury; Brosh, Quantitative Techniques for Managerial Decision Making, Prentice Hall.

Objective

Gaining competence in the use of quantitative techniques for planning and decision support and of approaches for their integration into the enterprise information environment.

Content

1. The planning process as information and decision problem
 - 1.1 Stages of the planning process
 - 1.2 Decision problems in planning processes
 - 1.3 Information requirement and information provision
2. Planning problems and modelling approaches
 - 2.1 Classification of planning and decision problems and their relationship with model categories
 - 2.2 Generic planning model
 - 2.3 Approaches for consideration of multiple objectives, risk and time
3. Planning and decision models
 - 3.1 Mathematical Programming
(Modelling alternatives; consideration of space/time/risk problem scenarios in enterprises and the sector)
 - 3.2 Probabilistic models (Markov, queuing, logistics models)
 - 3.3 Decision tree/analysis, Dynamic Programming
 - 3.4 Network models (e.g. PERT, CPM)
 - 3.5 Simulation (e.g. Monte Carlo), expert systems
 - 3.6 AHP-Analytical Hierarchy Process
4. Formulation of optimization models for different problem scenarios (especially enterprise decision problems)
 - 4.1 Modelling alternatives
 - 4.2 Formulation of models for selected problem scenarios
 - 4.3 Integration of models into decision processes
 - 4.4 Solution of decision problems including the consideration of risk
5. Formulation of simulation models for process optimization
 - 5.1 Identification and documentation of processes
 - 5.2 Formulation of process simulation models
 - 5.3 Determination of solutions
6. Integration of models into decision support systems (DSS)

Study Program	Master of Food and Resource Economics
Course	Household Economics and Decision Theory
Code	G-2.3
CP	6
Objectives/Competences	Households are central units of production and consumption. They will be the focus of differentiated analysis. Students are able to analyze decisions under uncertainty and to use methods for decision making
Code of instruction unit	G-2.3.1 und G-2.3.2
Coordinator	Prof. Dr. Michael-Burkhard Piorkowsky / Prof. Dr. Ernst Berg
Further information	See instruction unit

Study Program	Master of Food and Resource Economics
Course	Household Economics and Decision Theory
Code	G-2.3
CP	6
Class	Selected Topics of Household Economics
Code	G-2.3.1
Semester	1
Coordinator	Prof. Dr. Michael-Burkhard Piorkowsky
Lecturer	Prof. Dr. Michael-Burkhard Piorkowsky
Language	English
Course relevance	Compulsory subject - Annex 1B: Focused Basics
Teaching concept: hours/week	Lecture 2 hours/week
Workload	Lectures 30 h Homework 60 h
CP	3
Recommended Requirements	
Objectives/Competences	The course provides an introduction to household economics, with reference to selected research questions and applications. Students will have an understanding of different concepts of household production as a main topic of household economics.
Contents	Course structure on the next page
Type of Examination	Written exam
Literature	<p>Boulding, K. E.: Economics as a Science. New York 1970.</p> <p>Ekins, P.; Max-Neef, M. (Eds.): Real-life economics. Understanding wealth creation. London, New York 1992.</p> <p>Kutsch, Th.; Piorkowsky, M.-B.; Schätzke, M.: Einführung in die Haushaltswissenschaft. Haushaltsökonomie – Haushaltssociologie – Haushaltstechnik. Stuttgart 1997.</p> <p>Piorkowsky, M.-B.: Rezension von: Schweitzer, R. von: Einführung in die Wirtschaftslehre des privaten Haushalts. Stuttgart 1991. In: Hauswirtschaft und Wissenschaft, 40. Jg., 1992, S. 46-48.</p> <p>Schweitzer, R. von: Einführung in die Wirtschaftslehre des privaten Haushalts. Stuttgart 1991.</p> <p>Schweitzer, R. von: Home Economics Science and Arts. Managing Sustainable Everyday Life. Frankfurt am Main 2006.</p>

Code G-2.3.1	Selected Topics of Household Economics
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Aims

The course provides an introduction to household economics and the household production approach with reference to selected research questions and applications.

Contents

1. Households in an orthodox theoretical framework
2. Households in a household economics perspective
3. Household formation and household management
4. Business formation and entrepreneurship
5. Welfare production, poverty risks and preventing poverty
6. Household metabolism and sustainable development

Study Program	Master of Food and Resource Economics
Course	Household Economics and Decision Theory
Code	G-2.3
CP	6
Class	Decision Theory
Code	G-2.3.2
Semester	2
Coordinator	Prof. Dr. Ernst Berg
Lecturer	Prof. Dr. Ernst Berg
Language	German
Course relevance	Compulsory optional subject - Term 3: Study Line A "Management" Core Courses
Teaching concept: hours/week	Lecture 2 hours/week
Workload	Class 30 h own studies 60 h
CP	3
Recommended Requirements	
Objectives/Competences	Students are able to analyze decisions under uncertainty and to use methods for decision making
Content	Course structure on the next page
Type of Examination	Written exam
Literature	Bamberg, G. und A.G. Coenenberg (1985): Betriebswirtschaftliche Entscheidungslehre. 4. Auflage, München. Doherty, N.A. (2000): Integrated Risk Management: Techniques and Strategies for Reducing Risk, Washington DC. Hanf, C.-H. (1986): Entscheidungslehre –Einführung in Informationsbeschaffung, Planung und Entscheidung unter Unsicherheit, München-Wien. Hardaker, J.B., R.B.M. Huirne und J.R. Anderson (1997): Coping with Risk in Agriculture Oxon - New York. Knight, F.H. (1957): Risk, Uncertainty and Profit, New York. Laux, H. (1982): Entscheidungstheorie – Grundlagen, Berlin- Heidelberg-New York.

Content

1. Introduction
 - Objectives and foundations of decision theory
 - Basic elements of decision models
 - Classification of decision problems under uncertainty
2. Probabilities
 - 1.1. Subjective and objective probabilities
 - 1.2. Obtaining subjective probabilities
 - 1.3. Using historic data as a tool
 - 1.4. Revision of probabilities in view of new information
2. Utility
 - 2.1. Basic concept of the risk-utility-function
 - 2.2. Bernoulli's principle
 - 2.3. Identification of utility functions
 - 2.4. Algebraic representation of utility function and risk aversion
 - 2.5. Certainty equivalent and mean-variance approach
 - 2.6. Limitations of the risk-utility approach
3. Stochastic dominance
 - 3.1. CDF: cumulated distribution function: stochastic dominance as a concept
 - 3.2. Expected value and distribution as measures
 - 3.3. Value at Risk
4. Possibilities to include uncertainty and risk attitude in models
 - 4.1. Basic possibilities
 - 4.2. Stochastic models
 - 4.3. Risk analysis
5. Riskmanagement
 - 5.1. Starting points and instruments of risk management
 - 6.2 Strategies for risk limitation

Study Program	Master of Food and Resource Economics
Course	Management of Natural Resources
Code	G-2.4
CP	6
Objectives/Competences	Students are familiar with the basic macro- and microeconomic concepts and understand the dynamics of renewable and not renewable resources as well as their implications for the management of natural resources in the primary sector
Code of instruction unit	G-2.4.1 und G-2.4.2
Coordinator	Prof. Dr. Ernst Berg/Prof. Dr. Karin Holm-Müller
Further information	See instruction unit

Study Program	Master of Food and Resource Economics
Course	Management of Natural Resources
Code	G-2.4
CP	6
Class	Management of Natural Resources: The Micro-perspective
Code	G-2.4.1
Semester	3
Coordinator	Prof. Dr. Ernst Berg
Lecturer	Prof. Dr. Ernst Berg
Language	English
Course relevance	Compulsory subject - Annex 1B: Focused Basics
Teaching concept: hours/week	Lecture 2 hours/week
Workload	Lecture 30 h Self-study 60 h
CP	3
Recommended Requirements	
Objectives/Competences	Students understand the dynamics of renewable resources as well as the economic consequences of the utilisation of resources
Content	Course structure on the next page
Type of Examination	Test
Literature	Beckenbach, F. (Hrsg.) (1992): Die ökologische Herausforderung für die Ökonomische Theorie, 2. Aufl., Marburg. Berg, E. und F. Kuhlmann (1993): Systemanalyse und Simulation für Agrarwissenschaftler und Biologen, Stuttgart. Renndall, A. (1987): Resource Economics. An economic Approach to Natural Resource and Environmental Policy

Content

1. Definition of natural resources
 - 1.1. Natural resources as inputs and outputs in the production process
 - 1.2. Systematic of natural resources
 - 1.3. The intertemporal allocation problem

2. Resource use as an intertemporal decision problem
 - 2.1. Opportunity costs and interest
 - 2.2. Comparison of payments over time

3. Economics of the utilisation of renewable resources
 - 3.1. System dynamics and stability
 - 3.2. Regeneration function
 - 3.3. The concept of maximal sustainable yield
 - 3.4. Determining the optimal rate of resource use

Study Program	Master of Food and Resource Economics
Course	Management of Natural Resources:
Code	G-2.4
CP	6
Class	Management of Natural Resources: The Macro-perspective
Code	G-2.4.2
Semester	1
Coordinator	Prof. Dr. Karin Holm-Mueller
Lecturer	Prof. Dr. Karin Holm-Mueller
Language	English
Course relevance	Compulsory subject - Annex 1B: Focused Basics
Teaching concept: hours/week	Lecture with integrated students' participation, 2 hours/ week
Workload	Class 30 h Own studies 60 h
CP	3
Recommended Requirements	
Objectives/Competences	Students will know basic economic concepts concerning natural resources in the primary sector. They will be able to use these concepts in discussing current policy options. By completing assignments and discussing them in class students will be able to solve small problems on their own and defend their solutions in public.
Content	I The approaches of ecological and environmental economics II Efficiency analysis <ul style="list-style-type: none"> • Market failure, public goods, theoretical internalization • Welfare economic assessment of different instruments (command and control approach, taxes, emission trading, liability laws) • Accounting for uncertainties III Macroeconomic questions <ul style="list-style-type: none"> • Environmental Kuznets Curve • Welfare indicators beyond the GDP • International trade and the environment • Eco-taxes
Type of Examination	Written exam
Literature	Perman et al, Natural Resource and Environmental Economics, Pearson Education, Harlow et al, 2003 and selected material.

Objective

The course will give an introduction into basic economic concepts concerning natural resources with a focus on pollution control and will enable students to use these concepts in discussing current policy options from a macroeconomic perspective.

Content

I The approaches of ecological and environmental economics

II Efficiency analysis

- Market failure, public goods, theoretical internalization
- Welfare economic assessment of different instruments (command and control approach, taxes, emission trading, liability laws)
- Accounting for uncertainties

III Macroeconomic questions

- Environmental Kuznets Curve
- Welfare indicators beyond the GDP
- International trade and the environment
- Eco-taxes