

820767 - EEMPEI - Energy Economy and Comprehensive Energy Planning Models

Coordinating unit: 240 - ETSEIB - Barcelona School of Industrial Engineering
Teaching unit: 709 - EE - Department of Electrical Engineering
Academic year: 2019
Degree: MASTER'S DEGREE IN ENERGY ENGINEERING (Syllabus 2013). (Teaching unit Optional)
MASTER'S DEGREE IN ENERGY ENGINEERING (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 5 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Martin Cañadas, Maria Elena

Teaching methodology

Lectures, guided study sections

Learning objectives of the subject

The aim of the course is to bring students to the fundamentals of energy economics, providing them the basic tools needed to understand the current energy problems and their interconnection with other fields.

Study load

Total learning time: 120h	Hours small group:	30h	25.00%
	Guided activities:	10h	8.33%
	Self study:	80h	66.67%

820767 - EEMPEI - Energy Economy and Comprehensive Energy Planning Models

Content

1. INTRODUCTION.	Learning time: 4h Theory classes: 4h
<p>Description:</p> <p>1.1. Basic definitions: primary and secondary, renewable and non-renewable, commercial and non-commercial, conventional and non-conventional energy products.</p> <p>1.2. Energy supply chain components.</p> <p>1.3. Flow of energy products.</p>	
2. ENERGY BALANCE.	Learning time: 9h Theory classes: 9h
<p>Description:</p> <p>2.1. Definition of energy balance, structure and typologies.</p> <p>2.2. Analysis of the information of the energy balance. Energy supply mix, self-reliance in supply, share of renewable energies, efficiency of electricity generation, power generation mix, refining efficiency, overall energy transformation efficiency, per capita consumption of primary and final energy, energy intensity.</p>	
3. ECONOMIC FOUNDATIONS OF ENERGY DEMAND.	Learning time: 56h Theory classes: 56h
<p>Description:</p> <p>3.1. Microeconomics basic concepts.</p> <p>3.2. Analysis of the consumer's demand for energy: Utility maximization problem. Consumer's preferences, utility function, budget line, indifference curves. The method of Lagrange multipliers. Energy demand curve of an individual, energy demand curve of the market.</p> <p>3.3. Cost minimization problem of the producer. Production function, isoquant curves, total cost of production, isocost lines, conditional factor demand functions, production expansion path</p>	
4. ALTERNATIVE APPROACHES TO ENERGY DEMAND ANALYSIS.	Learning time: 81h Theory classes: 81h
<p>Description:</p> <p>4.1. Descriptive analysis. Growth rates: year-on-year growth rate and annual average growth rate over a period. Demand elasticities. Energy intensities.</p> <p>4.2. Index decomposition analysis. Analysis of change in total energy demand. Analysis of change in energy intensities.</p>	

820767 - EEMPEI - Energy Economy and Comprehensive Energy Planning Models

Qualification system

$$N=0,4*N1+0,3*N2+0,3*N3$$

N1: Examen final

N2: Ejercicios entregados

N3: Trabajo final

Bibliography

Basic:

Bhattacharyya, S.C. Energy Economics : Concepts, Issues, Markets and Governance [on line]. London: Springer London, 2011 [Consultation: 02/11/2016]. Available on: <<http://dx.doi.org/10.1007/978-0-85729-268-1>>. ISBN 9780857292681.

Dorsman, André. Energy economics and financial markets [on line]. Springer: Berlin, Heidelberg, 2013 [Consultation: 02/11/2016]. Available on: <<http://dx.doi.org/10.1007/978-3-642-30601-3>>. ISBN 9783642306013.