

Course Unit	Energy Policy and Investment Analysis	Field of study	Economics
Master in	Renewable Energy and Energetic Efficiency	School	School of Technology and Management
Academic Year	2023/2024	Year of study	1
Type	Semestral	Semester	1
Level	2-1	ECTS credits	6.0
Code	6793-475-1103-00-23		
Workload (hours)	162	Contact hours	T 30 TP 30 PL - TC - S - E - OT - O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) António Borges Fernandes, Luís Manuel Frolen Ribeiro, Pedro Jose Marques Silva

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Evaluate different financial, economical and associated risk scenarios of a renewable energy plants
2. Understand the frame of a financial operation and the meaning of the three variables involved: capital, time and interest.
3. Identify the core aspects of an investment in order to find the optimum structure that enable project funding

Prerequisites

Before the course unit the learner is expected to be able to:

1. Linear algebra
2. Statistics

Course contents

Concept of energy and energy service. Energy and Environment. Energy markets and electric sector. Regulatory systems. Basic concepts of finances. Selection criteria of the most suitable investment type

Course contents (extended version)

1. Introduction
 - Energy, definition and concepts
 - Energy and progress; energy intensity
 - Dominant cultural energy; change in energy paradigm; energy policy vectors
 - Oil and coal markets; Oil and energy markets; geopolitics marks and dependencies
2. Energy and Environment
 - Traditional fuels
 - Environmental problems associated with traditional fuels
 - Quioto protocol and commerce of CO2 emmissions
 - Energy dilemma in modern societies
 - Energy saving measures
3. Renewable energy sources
 - Renewable/alternative; concept of "renewable"
 - Origin and renewable types - solar radiation; renewable energy sources, technologies and maturity.
 - Future global energy positioning
4. Energy markets and electric sector
 - Formation and evolution of Portuguese energy policy
 - Energy planning
 - Evolution of EU energy policy
 - Market regulation
 - Economic Regulation, the natural monopoly
 - Regulation types: traditional, subsidised policies; regulation flaws
 - EU electricity market regulation
 - Electricity public service
 - Evolution of regulatory market, control prices for electricity consumers
 - Economic regime of electricity producers (small hydro, cogeneration, wind, fotovoltaic)
5. Basic concepts of Finances
 - The time value of money; time, capital and interest; interest rate and discount;
 - Capitalisation regime and equivalencies of capital
 - Rents and amortisation of short term loans, average and long term loans
 - Frame and relative concepts of investment projects and studies of viability of a project
 - Criteria and evaluation methods
 - Prize system and considerations regarding project selection

Recommended reading

1. Energy and Civilization: A History, Vaclav Smil, The MIT Press, 2017
2. Factfulness - Factualidade LIVRO Dez razões pelas quais estamos errados acerca do mundo, Hans Rosling, Anna Rosling Rönnlund, Ola Rosling, Temas e Debates, 2019
3. Alterações Climáticas: o que sabemos, o que não sabemos, Judith A. Curry - Editora Guerra & Paz, 2019
4. "Elaboração e Análise de Projetos de Investimento", Lopes, M. D. S., FEUP Edições, 4.ª Ed., Porto, 2018
5. "Principles of Corporate Finance", Brealey, R.; Myers, S. & Allen, F. McGraw-Hill Education - Europe, 10. th Ed., 2008

Teaching and learning methods

Theoretical sessions supporting the resolution of exercises and working cases, and tutorial sessions

Assessment methods

1. Assignments - Part I and II - (Regular, Student Worker) (Final, Supplementary)
 - Development Topics - 50% (Part I - Energy Policy - Set of individual assignments based on the lectures themes.)
 - Practical Work - 50% (Investment analysis - final work)
2. Final exam - (Regular, Student Worker) (Special)
 - Final Written Exam - 100% (Final exam)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

António Borges Fernandes, Luís Manuel Frolen Ribeiro	Joaquim Agostinho Mendes Leite	João Eduardo Pinto Castro Ribeiro	José Carlos Rufino Amaro
11-10-2023	11-10-2023	12-10-2023	20-10-2023