

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	Level	2-1	ECTS credits 6.0
Туре	Semestral	Semester	1	Code	6793-475-1103-00-23	
Workload (hours)	162	Contact hours	T 30 TP	30 PL - T nd problem-solving; PL - Problem-	C - S - 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:

- Evaluate different financial, economical and associated risk scenarios of a renewable energy plants
 Understand the frame of a financial operation and the meaning of the three variables involved: capital, time and interest.
 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
- 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

 Energy and Environment

 Traditional fuels
 Environmental problems associated with traditional fuels

- Traditional fuels
 Environmental problems associated with traditional fuels
 Quioto protocol and commerce of CO2 emmisions
 Energy dilemma in modern societies
 Energy saving measures
 Renewable energy sources
 Renewable/alternative; concept of "renewable"
 Origin and renewable types solar radiation; renewable energy sources, technologies and maturity.
 Future global energy positioning
 Energy markets and electric sector
 Formation and evolution of Portuguese energy policy
 Energy planning

 - Energy planning
 Evolution of EU energy policy

 - Evolution of EU energy poincy
 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, photovoltaic)
- Economic regime of electricity producers (sinial rivito, cogeneration, wind, protovoltar 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

Teaching and learning methods

- Prize system and considerations regarding project selection

Recommended reading

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

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

Assessment methods

- 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)

 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