

GENERAL INFORMATION

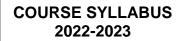
Course information		
Name	Economy of the Electric Power Industry	
Code	ECO	
Degree	Master in the Electric Power Industry (MEPI)	
Year	2022-23	
Semester	1 st	
ECTS credits	6 ECTS	
Туре	Required	
Coordinator	José Pablo Chaves Ávila	

Instructor	
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Instructor		
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DETAILED INFORMATION

Contextualization of the course

Contribution to the professional profile of the degree

The objective of the course is to become familiar with electric power systems' microeconomic and financial fundamentals. The concepts presented in this course will set the foundations for properly understanding stakeholders' decision-making processes in the electricity industry.

Prerequisites

There are no prerequisites for this course. The course assumes the student is not familiar neither with microeconomics nor with financial analysis.



CONTENTS

Contents

Theory

Chapter 1. Microeconomic Analysis of the Electric Power Industry

- 1.1 Demand and supply
- 1.2 Centralized context
- 1.3 Perfect competitive markets
- 1.4 Monopoly
- 1.5 Oligopoly

Chapter 2. Financial Statements Analysis

- 2.1 Financial statements. Structure of balance sheet and income statement
- 2.2 Balance sheet analysis: assets, equity and liabilities
- 2.3 Income statement analysis: revenues & expenses
- 2.4 Cash flow statement analysis
- 2.5 Case study

Chapter 3. Costs and Return Analysis

- 3.1 Economic and Financial Return. Value Creation and Financial Leverage.
- 3.2 Case study. Windfall profits. Regulation impact on economic and financial analysis
- 3.3 Economic and Financial Analysis. Stock market and Rating Ratios.
- 3.4 Economic and financial Analysis. Generation and distribution costs. Discounted cash flow valuation. Sum of the parts valuation.

Chapter 4. Electricity Industry Financing

- 4.1 Introduction. Objectives and financial policies.
- 4.2 Cost of Capital. Optimal financial structure
- 4.3 Financial needs and working capital management
- 4.4 Alternatives for financing. Risk analysis and risk management
- 4.5 Analysis and valuation of electricity companies by financial markets

Chapter 5. Strategy in the Electricity Sector

- 5.1 Introduction to strategy in the electric power industry
- 5.2 Business models in the electricity industry
- 5.3 Build, borrow or buy a framework
- 5.4 Case presentations



Competences and Learning Outcomes

Competences

Basic Competences

CB2 Being able to apply and integrate the knowledge, their comprehensiveness, the scientific founding, and their abilities to solve problems in new environments and defined in an imprecise manner, including multidisciplinary contexts as highly qualified researchers and professionals.

Specific Competences

- CE7 Being able to transfer theoretical concepts of Microeconomics to the study and analysis of the real markets.
- CE8 Understand the accounting and financial regime of a company and know the general mechanisms for settlement of the sector. To be able to realize the investment analysis in an electricity company and understand the main aspects of strategic management of the sector.

Learning outcomes

By the end of the course, students should be able to:

- LO1. Understand the drivers behind demand and supply behaviour.
- LO2. Understand the efficiency gains a market environment can achieve,
- LO3. Understand why the market does not always do its job. In this respect, the student will be able to identify the most relevant market failures affecting electricity markets
- LO4. Understand the most relevant financial concepts, with a particular focus on the electricity industry.
- LO5. Use some well-known techniques and methods aimed to analyze electricity companies' financial position.
- LO6. Understand the electricity company's strategy



TEACHING METHODOLOGY

General methodological aspects of the course		
Classroom Methodology: Activities	Competences	
Lectures. Description of the course contents and open discussion of concepts. The students also have to try to respond to the numerous questions posed by the instructors throughout the lecture (54 hours).	CB2, CE7, CE8	
Oral presentations . The students have to discuss the most relevant aspects of their work (6 hours).	CB2	
Tutorial activities . Available according to the need of the student. (5 hours)	CB2, CE7, CE8	
Non-Classroom Methodology: Activities	Competences	
The classroom activity should be complemented by the individual student work performed out of class.		
Personal study. Study of the course contents (90 hours).	CB2, CE7, CE8	
Term task . The student has to apply the theoretical concepts reviewed in class real cases (25 hours).	CB2	



GRADING

There are five blocks in the course. Each of these blocks has a different instructor and a different grading system (described below). The total grade of the course will be the weighted average of the five parts, where each part gives weights in the weights of sessions.

To pass the course in the regular assessment period, a minimum grade of 3,5 (out of 10) in each of the five parts will be needed, and an average equal to or above 5.

In case the student does not pass the course, the final grade in the regular assessment period will be the lowest of the five marks, and the student will have to retake all the blocks with less than 5 points (the grade corresponding to blocks with 5 or more points will be maintained). After the retake, the total grade of the course will again be the weighted average of the five parts, where each part gives weights concerning the sessions.

3.1 Grading in the regular assessment period:

Block 1: Microeconomics

Evaluation activities	Evaluation Criteria	Weight
Exams Exams are a combination of short questions, multi-option tests and problems.	''	90 %
Participation in the class	- Contribution to the class discussions	10%

Block 2: Financial Statements Analysis

Evaluation activities	Evaluation Criteria	Weight
Exam Exams are a combination of short questions, multi-option tests and problems.	 Concept understanding Application of concepts to the solution of practical problems 	80%
Participation in the class	- Contribution to the class discussions	10%
 Business case Analysis of a real business case. 	- The team task will be evaluated based on the quality of the analysis and the application of the concepts introduced in class.	10%

Block 3: Cost and Return Analysis

Evaluation activities	Evaluation Criteria	Weight
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Exam Exams are a combination of short questions and multi-option tests.	Concept understandingApplication of concepts to the solution of practical problems	90 %
Participation in the class	- Contribution to the class discussions	10%

Block 4: Electricity Industry Financing

Evaluation activities	Evaluation Criteria	Weight
Exam Exams are a combination of short questions, multi-option tests and problems.	 Concept understanding Application of concepts to the solution of practical problems 	90 %
Participation in the class	- Contribution to the class discussions	10%

Block 5: Strategy in the Electricity Sector

Evaluation activities	Evaluation Criteria	Weight
Participation in the class	- Contribution to the class discussions	35%
Business case	The final case presentation will be evaluated from two points of view:	65%
	- The quality of the analysis itself, the clarity and the comprehensiveness of the assessment.	
	- The oral presentation of the work, the way the students build up their discussions and their ability to back their proposals and respond to the questions received.	

Overall course grading

Evaluation activities	Evaluation Criteria	Weight
Exams Exams are a combination of short questions, multi-option tests and problems.		70%



Participation in the class	- Contribution to the class discussions	15%
Business case Analysis of a real business case.	- The team task will be evaluated based on the quality of the analysis and the application of the concepts introduced in class.	15%

3.2 Retake

Retakes

In case the student does not pass the course in the regular period, she/he will have to retake all blocks with an individual grade below 5 points. The dates of the retake evaluation period will be announced on the web page. The grading system of each block in the retake is described below.

Each of the five chapters (parts) will have the following grading system in the corresponding retake:

- Block 1 (Microeconomics): exam (100%)
- Block 2 (Financial Statements Analysis): exam (100%)
- Block 3 (Cost and Return Analysis): exam (100%)
- Block 4 (Electricity Industry Financing): exam (100 %)
- Block 5 (Strategy): case presentation (100 %).

A minimum grade of 3,5 (out of 10) in each of the five parts will be needed to pass the course. As in the regular assessment period, the average mark must be at least 5 out of 10 points (the grade corresponding to the blocks with 5 or more points in the regular period will be maintained to compute the average). Otherwise, the final grade will be the lowest of the five marks.

WORK PLAN AND SCHEDULE¹

Class	Content
1	Introduction to the course - Introduction to Microeconomics
2	Microeconomic analysis of the electric power industry - Demand and supply (i)
3	Microeconomics analysis of the electric power industry - Demand and Supply (ii)
4	Microeconomics - Centralized context (i)
5	Microeconomics - Centralized context (ii)
6	Microeconomics - Perfect competitive markets
7	Monopoly
8	Test

¹ A detailed work plan of the subject can be found in the course summary sheet (see the last pages).



9	Economic and Financial Return. Value Creation and Financial Leverage
10	Economic and Financial analysis. Ratios
11	Case studies
12	Generation and distribution costs. Discounted cash flow valuation.
13	Financial statements. Structure of balance sheet and income statement.
14	Balance sheet analysis: assets, equity and liabilities
15	Income statement analysis: revenues & expenses
16	Cash flow statement analysis
17	Case studies
18	Intro. Objectives and financial policies
19	Financial needs and working capital management
20	Cost of capital. Optimal financial structure
21	Alternatives for financing. Risk management (1/2)
22	Risk Management (2/2). Project Finance and non-recourse debt
23	Industry Valuation. Analysis of electricity industry by Financial Markets
24	Exam Finance
25	Introduction to strategy in the electric power industry
26	Value innovation. Business plan
27	Strategy in the electric power industry (1)
28	Strategy in the electric power industry (2)
29	Strategy in the electric power industry (3)
30	Case presentations

SCHEDULE

SUMMARY OF WORKING HOURS OF THE STUDENT										
	CLASSROOM HOURS									
Lectures	Oral presentations									
54	6									
NON-CLASSROOM HOURS										
Personal study	Personal work in case studies	Tutoring								
95	5									
		ECTS CRÉDITS:	6 (180 hours)							

BIBLIOGRAPHY

Basic bibliography

Presentations provided by the instructors

Complementary bibliography

Microeconomics

- 2013, I.Pérez-Arriaga "Regulation of the Power Sector". Chap. 2, "Power System Economics", M.Ventosa, P.Linares, I.Pérez-Arriaga
- 1986, Samuelson and Nordhaus, "Economics"

COURSE SYLLABUS 2022-2023



- 2005, Viscusi, Harrinton & Vernon "Economics of Regulation and Antitrust
- 1992, Varian, "Microeconomic Analysis"
- 1990, Tirole, "The Theory of Industrial Organization"

Financial Analysis

- 1999, G. Bennett Stewart III "The Quest for Value"
- 2010, Mckinsey & Company, "Valuation, Measuring and Managing the Value of Companies".
- 2000, Richard A. Brealey and Stewart C. Myers, "Principles of Corporate Finance".
- Aswath Damodaran, "Applied Corporate Finance: A User's Manual".
- 2003, Anthony Rice, "Account Demystified", Pearsons education

Strategy

- 2008, David J. Collis and Michael G. Rukstad, "Can You Say What Your Strategy Is?" HBR 2008
- 2004, W. Chan Kim, Renée Mauborgne, "Value Innovation The Strategic Logic of High Growth", , HBR 2004
- 2007, Robert S. Kaplan and David P. Norton "Using the Balanced Scorecard as a Strategic Management System", July–August 2007
- 2003, Paul M. Healy and Krishna G. PalepuPaper, "The Fall of Enron", Journal of Economics Perspectives, Volume 17, Number 2. (Spring 2003), pp. 3-26; Up to page 10
- 2010, McKinsey, "The five types of successful acquisition", McKinsey on Finance Number 36, Summer 2010



WORK PLAN (i/ii)

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Case studies Case studies Case	*	11				U				LO4, LO5	this methodology and the analysis usually performed by financial analysis is explained.
Financial statements. Structure of balance sheet and income statement. Problem solving Balance sheet analysis: assets, equity and liabilities Froblem solving Balance sheet analysis: assets, equity and liabilities Froblem solving Balance sheet analysis: assets, equity and liabilities Financial statements. Structure of balance sheet and income statement. Problem solving Case study LO4, LO5 Structure and basic concepts of the Balance Sheet and the Income Statement. Different types of balance Sheet. Practical approach, analysing Iberdrola's Financial Statements. Analysis of the Jacome Statement. Study of the different margins shown in an Jacome Sheet.			Casa studios				Review and				Case studies: the previously explained concepts and analytical tools are applied to the
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4 13 Problem solving 6 Solving Case study LO4, LO5 Structure and basic concepts of the Balance Sheet and the Income Statement. Review and self-study Solving Case study LO4, LO5 Different types of balance Sheet. Practical approach, analysing iberdrola's Financial State Analysis of the locome Statement.											Introductory session to the Financial Statements: information contained, different types,
Balance sheet analysis: assets, equity and liabilities Problem solving Review and self-study Different types of balance Sheet. Practical approach, analysing Iberdrola's Financial State Analysis of the Income Statement. Study of the different margins shown in an Income			Financial statements. Structure of balance sheet and income statement.			6		Problem			basic principles used to prepared them, objectives and main users. Preliminary analysis of the
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14 Problem solving self-study LO4, LO5 Different types of balance Sheet. Practical approach, analysing fleet from it an Income.			clance check and raise accepts, again, and lightlities				Review and		1		
Analysis of the Income Statement Study of the different margins shown in an Income		14	Daiance Sheet analysis. assets, equity and habilities	Problem solving			self-study			LO4, LO5	Different types of balance Sheet. Practical approach, analysing Iberdrola's Financial Statement
Income etatement analysis: royonues & expenses	4		Income statement analysis: revenues & expenses			6					Analysis of the Income Statement, Study of the different margins shown in an Income
I 1 151 Statement: contribution margin FRIDIDA FRILERI and Net Result		15	statement analysis: revenues α expenses							LO4, LO5	Statement: contribution margin, EBIDTDA, EBIT, EBT and Net Result.
Review and Rasic concents and methods to prepare a Cash Flow Statement, Review of the different k			Cook flow statement analysis			0	Review and				Basic concepts and methods to prepare a Cash Flow Statement, Review of the different kinds
Cash flow statement analysis 16 Cash Flows. Free Cash Flows and Net Cash Flow. Analysis of Iberdrola's Cash Flow.	L	16	Cash now statement analysis				self-study			LO4, LO5	of Cash Flows. Free Cash Flows and Net Cash Flow. Analysis of Iberdrola's Cash Flow.



WORK PLAN (ii/ii)

			In-class activities Out of Class activities		rtivities	Learning outcomes					
				111 Class ac	ctivities		Out	Of Cluss u	Individual and	ÿ	
				Lecture and				Problem		Learning	
Wee	kh/w	Class	Content	problem solving	Assessment	h/w	Self-study			outcomes	Description
	,	Ciasi	- Content	problem solving	Assessment	,	oen staay	Joinnig	doorgriniento	outcomes	Case studies: the previously explained concepts and analytical tools are applied to the
		17	Case study		Case studies					LO4, LO5	consolidated financial statements of a relevant electricity group of companies.
										,,	, , , , , , , , , , , , , , , , , , ,
9	4					6					The time value of money is introduced to explain the discounted cash flow methodology.
			Intro. Objectives and financial policies				Review and				Application to the case of a generation plant and to a distribution network. The link between
		18					self-study			LO4, LO5	this methodology and the analysis usually performed by financial analysis is explained.
											The objective of the firm, the positioning of the financial function within the company and the
			Financial needs and working capital management								strategic decisions of financial management (investment, financial infrastructure, dividend,
10	4	19				6				LO4, LO5	financial communication).
			Coat of capital Optimal financial structure				Review and				The cost of the financial resources used by the company (WACC). Optimal financial structure.
		20	20 Cost of capital. Optimal financial structure				self-study			LO4, LO5	Rating Agencies and the rating process.
			Alternatives for financing. Risk management (1/2)								Financial Planning Process (short and long term). Working Capital Management. Banking
		21								LO4, LO5	instrument for the short term financial management.
11	4					6					The relationship bank-company. Alternatives for funding the company (long term), including
			Risk Management (2/2). Project Finance and non-recourse debt				Review and				equity, banking products and capital markets. Financial Derivatives. The risk management
		22					self-study			LO4, LO5	process.
											Analysis and valuation of electricity companies by financial markets: Quantitative and
12	4	Industry Valuation. Analysis of electricity industry by Financial Markets			6					Qualitative analysis. Different methods used to valuate a company/project. Valuation using	
		23					Review and			LO4, LO5	dynamic models (cash flow discount).
	1		Exam Finance		Exam		self-study			LO4, LO5	Exam
40	۱.	25	Introduction to strategy in the electric power industry			_				LO4, LO5	Key concepts of Business Unit Strategy. Readings & Discussion: What is strategy?
13	4		Business models in the electricity industry			6	Review and				Strategy and Financial Statements
	1	26	Duild however on here (I)				self-study			LO6	Review of financial statement analysis- relationship with strategy.
14	4		Build, borrow or buy (I)				Review and	-	Case study	LO6	Business Plans. Readings & Discussion: How to write a great business plans. Mergers & Acquisitions.
14	"	20	Build, borrow or buy (II)				self-study			LO6	Readings & Discussion: Making Acquisitions, Valuation Methods.
		20	Strategy in the electric power industry				Review and			LO6	neadings & Discussion, Making Acquisitions, Valuation Methods.
15	4	_	Case presentations		Drocontations	6				LO6	
		30	Case presentations		Presentations		self-study			LUB	