



**Eastern  
Mediterranean  
University**

*"Virtue, Knowledge, Advancement"*

FACULTY OF BUSINESS AND ECONOMICS

# ENERGY ECONOMICS AND FINANCE

MASTER'S PROGRAM

# Energy Economics and Finance Graduate Program

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## Energy Economics and Finance Master's Program (with Thesis)

The objective of the Master's program in Energy Economics and Finance is to provide advanced training in the application of economic theory and quantitative methods for the analysis of problems related to economics and finance of energy markets and the design of energy policies. Candidates for the Master of Science degree in Energy Economics and Finance are required to complete seven courses (21 credit-hours), Seminar and a thesis. The program consists of five required core courses ECON 540 Microeconomic of the Energy, ECON 541 Energy Economics, FINA511 Corporate Finance in Energy Markets and FINA 512 Valuation and Risk Management in Energy Market and ECON 542 Quantitative Energy Economics. In addition, the students must complete two elective courses in energy economics or a closely related field. Students who wish to complete the master's program in Energy Economics and Finance who have completed an undergraduate degree in another field may be admitted to the program, subject to successfully completing selected prerequisite undergraduate Economics and Finance courses.

## Career employment opportunities for energy economics and finance graduates

The career prospect for the graduate from the energy economics and finance program on successful completion includes the following though not limited to:

- Graduate from the aforementioned program can serve as a consultant in the energy and gas sector, given the analytical and practical skills acquired.
- A graduate can secure an academic faculty position, given the state of the art knowledge received during the course of the program.
- A graduate can also serve as energy financial analysts to both government and non-governmental organization (NGO) that are energy and finance based.

The global consciousness of both public and private sector on energy dynamics necessitate the supply of adequate infrastructure to match the requisite demand, as such the need to finance the need of the infrastructure is crucial. It becomes pertinent that the need for interdisciplinary knowledge is important. As such, the energy and finance graduate program of the Eastern Mediterranean University North Cyprus is tailored to match the global current market dynamics. The prospective candidate for the program is equipped with requisite analytical tools for future demands.

## What is the role of an energy economist?

- Energy economist develops economic models that predict future economic scenarios via forecasting models.

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- They also conduct innovative research on the demand and supply for energy and related environmental topical topics like global energy demand dynamic, energy conservation and environmental sustainability.
- Energy and financial economist arm policymakers and all stakeholders with ample information for cost-effective policy construction.

**The courses covered in the program include the following**

The course consists of five core mandatory courses and two elective courses. See Tables below for details and description of each course

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT HOUR</b>
ECON540	Microeconomics of Energy	(3,0,1) 3
ECON541	Energy Economics	(3,0,0) 3
ECON542	Quantitative Energy Economics	(3,1,0) 3
FINA511	Corporate Finance in Energy Markets	(3,0,1) 3
FINA512	Valuation and Risk Management in Energy Markets	(3,0,1) 3
ECON500	Master Thesis	(0,0,0) 0
ECON598	Seminar (Seminer)	(0,0,0) 0

**Elective Courses (2 elective courses)**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT HOUR</b>
ECON543	Geopolitics and Energy Security	(3,0,0)3
ECON544	Environment and Renewable Energy	(3,0,0)3
ECON503	Econometrics	(3,1,0)3
ECON583	Economic Development and Environmental Issues	(3,0,0)3
ECON604	Time Series Econometrics	(3,0,0)3

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ECON635	Seminar in Public Finance	(3,0,0)3
FINA514	Quantitative Methods in Finance	(3,1,0)3
FINA521	Investment Appraisal	(3,0,1)3
FINA522	Project Finance and Risk Analysis	(3,0,1)3
FINA623	Advanced Capital Budgeting	(3,0,1)3
INTL522	International Political Economy	(3,0,0)3
INTL556	Selected Issues in Natural Resource and Political Economy of Energy Policy	(3,0,0)3
MENG547	Energy Management and Utilization	(3,0,0)3
MENG548	Power Generation Systems	(3,0,0)3

## A) CORE COURSES DESCRIPTION

### **ECON540 Microeconomics of the Energy**

The main aim of this course is to teach students the basic concepts of Microeconomics with blends of the energy sector. This course also aim to solve the problems of energy sector with the aid of microeconomics concepts. The course covers supply-and-demand analysis, market equilibrium, the analysis of different market structures, international trade, investments, capacity, and includes real examples and events that occurred in the energy sector

### **ECON541 Energy Economics**

The main aim of this course is to convey basic information about the energy economy. This course explains trading energy raw materials, storage, and ultimate use of energy resources efficiency, energy shocks on economic fluctuations and the impact of discusses the relationships between energy and other economic activities. This course also examines the relationship between energy prices and its supply and demand.

### **ECON542 Quantitative Energy Economics**

In this course, students also learn how to use statistical computer programs to analyse energy related fundamental issues. Moreover, in this lesson, company related analyses, capital structures and evaluations, and portfolio management are also investigated.

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## **FINA511 Corporate Finance in Energy Markets**

The purpose of this course is to provide students with the investment decisions of energy companies and their valuation, stocks, bonds and options analysis of investments in financing. Theories and examples will be explained to students on the basis of applications supporting the energy sector.

## **FINA512 Valuation and Risk Management in Energy Markets**

This course serves as a bridge between the energy sector and the finance and risk management. This course is intended to provide participants with the information about energy markets and types of assets that are traded in the energy markets and Energy trading. Moreover, students will be aware of risk management in energy markets, energy derivatives markets, valuation, and futures contracts, energy hedging, and option pricing model in energy markets.

## **ECON598 Seminar**

This seminar course provides our master students with necessary knowledge on how to do the research for their work. As a part of the course, students have to also attend the weekly seminars held by the center for Economic Research of the Department of Economics. In this weekly seminar, Faculty of business and Economics, graduate students are able to present their research papers. While attending these seminars, students also learn how to prepare and present a research paper.

## **ECON500 Master Thesis**

## **B) ELECTIVE COURSES DESCRIPTION**

### **ECON543 Geopolitics and Energy Security**

The theory of basic consumption behaviors and their use in distinguishing different market segments; Using market segments to develop and differentiate consumption behavior; Ensuring compliance with the standards of product options according to the needs of consumers; Explains product solution options and explains their features and benefits to customers.

### **ECON544 Environment and Renewable Energy**

This course plans to discuss the past, present and future of environmental and energy use. In the past history of energy use, the discovery, use and environmental policies of renewable energy sources and the problems that may be encountered in the future, energy use problems in the future of energy use, nuclear energy use, wind energy and future energy needs and efficient use of energy resources will be covered. Finally, international environmental policies will be discussed.

### **ECON503 Econometrics**

Based on mathematical statistics; Functional model forms used in the formulation of economic theory; Classical linear regression model (univariate model); Assumptions; prediction; Tests; Estimation; Classical linear regression model (bivariate model);

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Deviations from the classical linear model; Variable variability; Autocorrelation; Multiple linear correlation etc. are examined.

### **ECON583 Economic Development and Environmental Issues**

Economic Development is a course with strong emphasis on solid base of knowledge on economic theory and analytical skills that will enable them to acquire the knowledge, skills, and experience needed to contribute at a high level to the economic and social development of their home countries and and working collaboratively with international organizations on developmental issues. The concept of development, measurement of development, historical aspects of economic development, the extent of development gap among countries. Major theories of development. Main policy issues; income distribution and poverty, population growth, employment, migration, foreign investment and industrialization, agriculture, stabilization policies, external debt.

### **ECON635 Seminar in Public Finance**

This course examines the role of the public sector in open economies, with emphasis on the design and implementation of taxation and fiscal policies. The course focuses on the development of the principles and applied techniques for identifying and evaluating the impacts of alternative tax policies on the economy's resource allocation, income distribution, capital formation, budgetary requirements and inflation. This course covers the alternative systems for direct and indirect taxes, including taxes on international trade.

### **ECON604 Time Series Econometrics**

ARIMA models, seasonal decontamination methods, trend-inner loop decomposition, structural fracture tests, unit root tests, vector autoregressive models, cointegration analysis will be examined.

### **FINA514 Quantitative Methods in Finance**

This course aims to give the students the skills to be useful in their academic and professional life. The scope of the course is not only to teach the theoretical statistics-econometrics, but emphasis on empirical practice. Within the scope of the course, it is aimed that the student will carry out an empirical study in the field of finance and apply the skills learned by using the actual data. For this purpose, it is expected that the student will be able to use a statistical package program competently, solve the problems that will be encountered during the research, and interpret the results obtained within the theoretical framework

### **FINA521 Investment Appraisal**

This course is devoted to the techniques of cost-benefit analysis of investment projects. The course covers both the analytical techniques and as well as their practical applications in decision-making. The course topics will cover financial modeling, alternative investment criteria, and maintaining consistency between real and nominal prices, inflation rates, exchange rates and interest rates. It will also cover how to determine

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the optimal scale and timing of investments and how to construct income statements and balance sheets from cash flow projections

### **FINA522 Project Finance and Risk Analysis**

This course deals with the project financing techniques and analysis the management of investment projects as well as the application and theories of financing techniques. Applications on road, production, electricity and airport projects are also included.

### **FINA623 Advanced Capital Budgeting**

This course will examine the issues of comprehensive evaluation methods used for the investment project. Economic phenomena used mainly in project evaluations will be explained. In the framework of comprehensive project analysis, it will be examined how they constitute economic analysis, financial, stakeholder and risk analysis and comprehensive project evaluation. Infrastructure projects such as road, electricity and water are studied and applied theoretically and practically.

### **INTL522 International Political Economy**

In this course, What are the theoretical approaches to understand the political economy and international relations? According to Bretton Woods, what is the role of international financial and commercial institutions in the global restructuring of political and economic power? What are the determinants of global development and immaturity in specific regions of the world? What is the nature of the economic change in the global North and South countries? Will be discussed.

### **INTL556 Selected Issues in Natural Resource and Political Economy of Energy Policy**

This course examines the issues related to energy, environmental conditions and the management of renewable natural resources (for example: forests) and at the same time non-renewable natural resources (eg coal, natural gas and oil). In addition, energy production and services (eg gasoline and electricity) are being explored. In addition, the course includes theory and related empirical methods related to: (1) sources of market failure in infrastructure and related sectors; (2) pricing, market structure and performance of key resources and energy industry; (3) complementary and alternative regulatory approaches. The aim of the course is to provide an understanding of the theoretical framework used by economists, political scientists, sociologists and relevant intellectual disciplines, as well as the response of the energy sector to energy policies and the role of societies in the design and implementation of public policies in the energy field. These issues will be related to theories such as state, regulation, monopoly, organizational behavior, public choice, international agreements and nuclear fuel cycles. The course will discuss key historical issues such as ethanol, climate change and energy security as well as current issues related to energy policy, as well as using the concept of "class" to close the gap between theory and practice as a framework. The role of national oil companies in the world oil market and the functioning of an intergovernmental organization such as OPEC will be analyzed. In addition to all these, there will be an increasing need for more electricity in the

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coming days, and ways to find alternative sources of electricity for that purpose will be explored and dealt with in depth to control nuclear weapons in the Middle East.

### **MENG547 Energy Management and Utilization**

A brief look at energy and its associated environmental problems. Energy Study. Cost of economic analysis and life cycle. Energy efficiency in buildings. Demand management in electricity generation. Energy efficiency and renewable energy approaches in developing countries. Efficient use of solar energy.

### **MENG548 Power Generation**

Gas turbines, Carbon dioxide power cycles, Diesel power plants, Other power generation systems, Economic analysis of power plants, Simulation of power plants and performance analysis.

### **Admission Requirements**

Applicants to M.S. program should have a B.S. degree with a CGPA greater than 2.5/4.0, English language test results (TOFEL min. 548, IELTS 6.5, YDS/UDS/ KPDS 66 or EMU English Language Test) and for Turkish citizen applicants have to obtain min 55 points from ALES exam.

### **Faculty Research Interests**

EMU Faculty who will be teaching in the Energy Economics and Finance Master of Science degree program are active researchers in energy markets, energy policy, macroeconomics, microeconomics, investment appraisal, corporate finance, financial economics, risk management, economics natural resources, energy market modelling, and renewable energy.

### **Contact Information**

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