TEL AVIV UNIVERSITY אוניברסיטת תל אביב

Full Syllabus

Course Title

Energy Economics

Lecturer

Dr. Zvi Baum

Semester

Spring

Course requirements

3 homework assignments.
Final exam.

Final grade components

3 Homework assignments: 30%.
Final exam: 70%.

Course schedule*

Class no.	Subject and Requirements (assignments, reading materials, tasks, etc.)
1	**Introduction:** energy sources, energy economics in historical perspective, trends in global energy consumption, energy supply chain, national energy balance, cost-benefit analysis, methods for determining the discount rate, levelized cost of energy.
2 - 3	**Analyzing and forecasting energy demand:** the derived nature of energy demand, the determinants of energy demand, stages in energy consumption decisions, capital-energy ratio, the link between economic development energy consumption and energy intensity, the relation between income and energy consumption, approaches for analyzing the demand for energy, energy intensity issues and challenges, modeling energy demand.
4	**Natural Gas:** natural gas production, advantages and disadvantages, conveying natural gas, natural gas markets, natural gas in Israel, projected demand for natural gas in Israel, Israel's natural gas framework, regulation and taxation, the Dutch disease, sovereign wealth funds.
5	**Petroleum Markets:** petroleum products, petroleum reserves and consumption trends, Hubert Peak, cartels, the dominant firm model, petroleum trade, benchmarks and futures, the behavior of petroleum markets.
6	**Nuclear Energy:** Introduction, global trends, nuclear power cost components, market analysis, small modular reactors, environmental aspects of nuclear power.

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7	**Renewable energies**: global trends, renewable energy in power generation – potential and challenges, renewable energy in Israel, smart grids, energy storage, demand side management.
8 - 9	**Models for analyzing energy supply:** the characteristics of energy markets, cost curves, resource allocation in a natural monopoly, investment and pricing decisions for energy products, investment and pricing decisions for energy products in low and high demand periods.
10	**Optimal management of non-renewable natural resources:** non-renewable resources theories, dynamic efficiency, static efficiency, Hotelling rules, Hotelling– subject elaboration.
11	**Selected Topics in Energy policy:** forming energy policy, policy measures, energy and the environment, emission abatement policies.

*Lectures listed by date are subject to change throughout the semester.

Required course reading

International Handbook on the Economics of Energy (2009). Edited by Lester C. Huntand Joanne Evans, University of Surrey, UK. Edward Edgar.

Optional course reading

Tietenberg, T., Lewis, L. (2016), Environmental & Natural Resource Economics, 10th Edition, London ; NewYork: Routledge, Taylor &Francis Group.

Mez, L. (2012). Nuclear energy–Any solution for sustainability and climate protection?, Energy Policy 48, 56–63.

Kessides, I. N. (2012).The future of the nuclear industry reconsidered: Risks, uncertainties, and continued promise, Energy Policy 48, 185–208.

Bronski, P. et al. (2015). The economics of load defection. Rocky Mountain Institute. Available from WWW.RMI.ORG.

Bronski, P. etal. (2014). The economics of grid defection. Rocky Mountain Institute. Available from WWW.RMI.ORG.

Fitzgerald, G.etal. (2015). The economics of battery energy storage. Rocky Mountain Institute. Available from WWW.RMI.ORG.

Bronski, P. etal. (2015). The economics of demand flexibility. Rocky Mountain Institute. Available from WWW.RMI.ORG