

JEE 621 Energy Economics, Markets and Policies

The Second Semester of Academic Year 2025

(Course coordinator: *Dr. Athikom Bangviwat*)

[athikom.bangviwat@outlook.om])

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1. Course Description

- 1-Major energy sources, their uses, markets, and value chains: fossil fuels (oil, gas, coal), nuclear, renewables; electricity, and transport.
- 2-Economics of energy use, energy demand, and energy supply, industrial organization, market structure and pricing, market failures and barriers for clean energy policy, economies of scale, externalities, and natural monopoly.
- 3-Domestic and international energy market structures: competitive, monopoly, oligopoly, cartel; liberalization of the energy sector, particularly electricity industry.
- 4-Economics of renewable energy sources, nonmarket valuation, and policy supports Economics of climate change, national policy, international cooperation and climate funds.

2. Target Knowledge, Skills, and Abilities (KSA)

Upon successful completion of the course, the students will have a comprehensive knowledge of energy economics, renewable resources, and energy markets. They will understand the driving forces and the economic, regulatory, technological, environmental, social, and policy aspects of this dynamic and evolving energy sector; and the nature of competition and monopoly in the energy industry. They will also understand the current and future trends and challenges for a sustainable energy sector.

3. Target group of students

The course is opened to Master and PhD students with a background in science or engineering.

4. Pre-requisites

None

5. Course Learning Outcomes

- CLO1: The students will have a comprehensive knowledge of energy economics, renewable resources, and energy markets.
- CLO2: They will understand the driving forces and the economic, regulatory, technological, environmental, social, and policy aspects of this dynamic and evolving energy sector; and the nature of competition and monopoly in the energy industry.
- CLO3: They will also understand the current and future trends and challenges for a sustainable energy sector.

6. Method of Teaching and Learning

This course will be delivered in a hybrid format, i.e. simultaneously online and on-site (Room EN3204 2nd Floor) with live lectures, group discussion, and individual/team project presentations.

7. Course Outline and Organization

This course is opened every Semester. For the Semester 2/2025 (B.E.2568), this course is scheduled every Tuesday afternoon (13.30 pm – 16.30 pm) from **Tuesday 13 January to 19 May 2026.**

Week	Date	Topic	Lecturer
1	13 Jan 2026	Introduction to Economics of Energy: energy and economy	Jaruwan Chontanawat
2	20 Jan 2026	Basic economic concepts	Jaruwan Chontanawat
3	27 Jan 2026	The Theory of Costs	Jaruwan Chontanawat
4	3 Feb 2026	Demand, Supply and Market structure	Jaruwan Chontanawat
5	10 Feb 2026	Macro economics	Jaruwan Chontanawat
6	17 Feb 2026	Energy classifications, Energy Balances, Energy data	Jaruwan Chontanawat
7	24 Feb 2026	Energy Demand: theory and measurement	Jaruwan Chontanawat
	3 Mar 2026	Bank Holiday	
8	10 Mar 2026	Mid Term Examination	Jaruwan Chontanawat
9	17 Mar 2026	Energy security and planning	Athikom Bangviwat
10	24 Mar 2026	Domestic and international energy markets of oil and gas	Athikom Bangviwat
11	31 Mar 2026	Domestic electricity industry	Athikom Bangviwat
12	7 Apr 2026	Economics of renewable energy sources	Athikom Bangviwat
	14 Apr 2026	Bank Holiday	
13	21 Apr 2026	Externality	Athikom Bangviwat
14	28 Apr 2026	National energy policy and international cooperation	Athikom Bangviwat
15	5 May 2026	Student Presentation	All lecturers
16	12 May 2026	Review and preparation for final examination	Athikom Bangviwat
17	19 May 2026	Final Examination	Athikom Bangviwat

8. Evaluation Methods

In-class participation / Assignments / Take-home Exam / Mini-Project.

- **Grading System:**

Examination	80%
Technical Report & Presentation	20%

- **Instructors:**

Assoc. Prof. Dr. Jaruwan Chontanawat [J.chontanawat@gmail.com]

Dr. Athikom Bangviwat [athikom.bangviwat@outlook.com]

9. References/Resources

Lecture notes and related literature distributed by the instructors.

Textbook

Eden, R., Posner, M., Bending, R., Crouch, E., Stanislaw, J. (1981). ***Energy Economics : growth, resources and policies.*** (1st Edition), Cambridge University Press, UK.

Additional reading

Evans, J. & Hunt, L. C. (Eds.) (2009) ***International Handbook on the Economics of Energy***, Cheltenham, UK: Edward Elgar, September 2009, 831 pages, ISBN 1-84720-352-6.

Banks, F.E. (2000) ***Energy Economics: A Modern Introduction***, Kluwer Academic Publishers.

Begg, D. (2003) ***Foundations of Economics***, (2rd Edition), McGraw-Hill, London.

Begg, D. (2006) ***Foundations of Economics***, (3rd Edition), McGraw-Hill, London.

Begg, D. (2009) ***Foundations of Economics***, (4th Edition), McGraw-Hill, London.

Begg, D. Vernessa, G., Fischer, S. and Dornbusch, R (2020): ***Economics***, (12th Edition). McGraw-Hill, London. (International Edition).

Nordhaus W. D., Samuelson P. A. (2010) ***Economics***, (19th Edition), McGraw–Hill, New York.

Some Useful Web-sites:

<http://www.iea.org/> (International Energy Agency)

<http://www.eia.doe.gov/>. (Energy Information Administration, Official Energy Statistics from the U.S. Government)

<http://www.bp.com/>. (British Petroleum Plc)

<https://www.worldbank.org> (World Bank Group)

<https://www.worldbank.org/ext/en/country/thailand> (World Bank Group - Thailand)

<https://hdr.undp.org/> (Human Development Reports), United Nations Development Programme

<http://www.eppo.go.th/> (Energy Policy and Planning Office, Ministry of Energy)

<http://www.dede.go.th> (Department of Alternative Energy and Development and Efficiency, Ministry of Energy)

<http://www.onep.go.th/> (Office of National Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment)

<http://www.nesdb.go.th/>. (Office of the National Economics and Social Development Board)

<http://www.bot.go.th/> (Bank of Thailand)

<https://tdri.or.th/en/> (Thailand Development Research Institute)