JEE 621 Energy Economics, Markets and Policies

(Course coordinator: *Dr. Athikom Bangviwat*
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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 1/2024 (B.E.2567), this course is scheduled every Wednesday afternoon (13.30 pm – 16.30 pm) from **Wednesday 14 August to 13 December 2024.**

Week	Date	Topic	Lecturer
1	14 Aug 2024	Introduction to Economics of Energy: energy and economy	Jaruwan Chontanawat
2	21 Aug 2024	Basic economic concepts	Jaruwan Chontanawat
3	28 Aug 2024	Demand, Supply, and Market structure	Jaruwan Chontanawat
4	4 Sep 2024	Macro economics	Jaruwan Chontanawat
5	11 Sep 2024	Energy defined & Classification of energy	Jaruwan Chontanawat
6	18 Sep 2024	Energy Balances	Jaruwan Chontanawat
7	25 Sep 2024	Energy Demand: theory and measurement	Jaruwan Chontanawat
8	**2 Oct 2024**	**Mid Term Examination**	Jaruwan Chontanawat
9	9 Oct 2024	Energy security and planning	Athikom Bangviwat
10	16 Oct 2024	Domestic and international energy markets of oil and gas	Athikom Bangviwat
11	30 Oct 2024	Domestic electricity industry	Athikom Bangviwat
12	6 Nov 2024	Economics of renewable energy sources	Athikom Bangviwat
13	13 Nov 2024	Externality	Athikom Bangviwat
14	20 Nov 2024	National energy policy and international cooperation	Athikom Bangviwat
15	27 Nov 2024	Student Presentation	All lecturers
16	4 Dec 2024	Review and preparation for final examination	Athikom Bangviwat
17	**11 Dec 2024**	**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:**

  Dr. Jaruwan Chontanawat (Instructor) [Jaruwan.Cho@.kmutt.ac.th, 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.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.nesdb.go.th/. (Office of the National Economics and Social Development Board)
http://www.onep.go.th/ (Office of National Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment)
http://www.bot.go.th/ (Bank of Thailand)
https://tdri.or.th/en/ (Thailand Development Research Institute)
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)