

**American University of Central Asia
Course Information
School of Economics and Business Administration
Fall 2017**

Course Title:	Introduction to Energy Resources Management
Course Code:	BUS-366
Course ID	4171
Course Coordinator:	Aikerim Motukeeva
Course Duration:	1 semester
No. of Credit Units:	6
Class meeting:	Thursday 10.50 a.m., Thursday 12.45 p.m.
Venue:	Room 303
Contact:	motukeeva_a@auca.kg
Appointments/Hours	Wednesday 10.40

Overview

1. Abstract

This course is designed to introduce students to the fundamental concepts of energy economics and current trends in global energy markets, including oil, gas, coal, and electricity market. It will offer insights into the process of energy price formation, supply chain management, and cost efficiency. Students will gain the understanding of energy supply and demand, the drivers behind them and the methods of their management on the example of global energy companies. A case study approach will be adopted while studying the issues of energy sector regulation and governance. In the light of the importance of sustainable energy technologies, particular attention will be paid to the economics of climate change and its influence on the business outcomes of energy companies.

2. Course Objectives

- To introduce key energy concepts and models.
- To learn how to use basic tools of economic and financial analysis with regard to energy issues, relying primarily on graphs, simple equations and other analytical tools.
- To enable students critically evaluate macroeconomic policy remedies for energy-related issues facing the Government.
- To make students aware of the link between energy markets and global macroeconomic indicators and national economies.
- To introduce key corporate and regulatory players on energy markets.

3. Learning Outcomes

- Students will gain insights into the functioning of energy markets
- Students will learn how to identify the economic and financial nexus between energy and national / global economic issues

- Students will learn how to manage energy resources so as to make its use efficient and sustainable

Suggested Pre-requisites

It is suggested that students have taken one of the following modules:

- Introduction to Finance
- Accounting I
- Macroeconomics
- Microeconomics

Course Details

4. Assessment Tasks / Activities

Assessment Components:

Class Participation:	15%
Class Attendance	10%
Presentation	15%
Presentation Report	20%
Midterm Exam	20%
Final Exam:	20%

Class Participation:

The course will follow a lecture + seminar format. All students are expected to participate during seminar classes, which will be based on the assigned readings and lecture materials. Attendance, punctuality, and class conduct counts towards the overall evaluation of Class Participation.

Presentation and Presentation report:

All students will be assigned topics on which they are to write a report (minimum 2000 words) and make a 20-minute presentation in class. The presentations are due on the date on which the topic is discussed according to the syllabus. Failure to present on the appointed date will result in lost grades for the assignment (15%). The report is due one week after the presentation. Late submissions are subject to point deduction in the amount of 5% per each late day.

The criteria for presentation evaluation are as follows:

25% - Good coverage of the topic (discussing the key elements of the problem and the significance from macroeconomic / business / financial / regulatory point of view).

25% - Analysis of the material presented (both giving data and explaining what it shows; which consequences does it have for the economy/company/government). The student should demonstrate capability to synthesize vast amounts of information and put the problem in the context of modern economy / business environment).

25% - The structure of power point slides (not too overcrowded with information; easily comprehensible and engaging).

25% - Ability to capture the attention / interact with the audience, raise provocative questions, or generate a class debate on the topic.

Class Attendance

Class attendance is compulsory and contributes 10% to the final grade. In case of absence, students are to present authentication from AUCA medical office. Except for unusual and limited circumstances, absence from classes will be viewed as indicative of a lack of commitment to the purposes of the course and will be factored into the final grade as such.

Midterm Exam:

The midterm exam focuses more on content covered from the first lesson till the lesson before the midterm exam (oil & gas) and will test both conceptual knowledge and problem solving abilities.

- This will be a closed book exam.
- The exam will be 75 minutes in duration.

Final Exam

- The exam will cover all topics after the midterm exam and will test both conceptual knowledge and problem solving abilities.
- This will be a closed book exam.
- The exam will be 75 minutes in duration.

Activities:

1. There will be a field trip to Kara Balta Oil Refinery on the pre-determined date that will be agreed upon with the students.
2. During one of the classes, there will be a guest lecture given by the employee of the National Energy Holding Company on the topic of electricity pricing.

5. Scores to Grade Conversion

The grading scale, which is standard in the Business Administration department, is as follows:

A	100 – 93	C	76 - 73
A-	92 – 90	C-	72 - 70
B+	89 – 87	D+	69 - 67
B	86 – 83	D	66 - 63
B-	82 – 80	D-	62 – 60
C+	79 – 77	F	59 - 0

The grade of **A** represents "outstanding scholarship." This is reserved for those students that have shown distinction in their performance, advance the general understanding of the material, and apply both terminology and principles in completing course related assignments.

The grade of **B** represents "good scholarship." This identifies a student that has performed at a higher than satisfactory level, exhibits proficient use of course related terminology, and deals with challenging topics.

The grade of **C** implies a student's performance is "satisfactory." This represents a student that has understood the subject material, shows reasonable competence, and conforms to the minimum requirements.

The grade of **D** represents limited ability to analyze material presented in lectures and readings. While the student has attended class and was involved in discussions, performance has been below class average.

The grade **F** represents poor learning or lack of effort, the student has failed to demonstrate even a minimal capacity to analyze concepts and theories. Misses most classes and performed very poorly

in, or even failed to participate in class discussions. The final paper, if submitted, has been of a poor standard or plagiarized.

In order to receive full credit, assigned work must be submitted before the scheduled submission deadline. Therefore, students keeping up with the course work and submitting assignments on time is essential. Late assignments will not be accepted for grading. If commitments make submitting assignments on schedule impossible, students must consult with the professor at least three days in advance to make other arrangements.

6. Course Policies:

- Course instructor reserves the right to modify any and all portions of this syllabus at any time during the period of the course. Any modifications will be communicated in writing to the students.
- Attendance is compulsory.
- All readings should be done **BEFORE** the class.
- All written assignments are to conform to the reference and citation practices of APA style format (APA style Format 6th Edition – Publication Manual of the American Psychological Association, copies are available at BF 76.7 P83 2010).

7. Academic Integrity

- I. The use of cell phones (talking, texting, etc.) during class is strictly prohibited. Students violating this policy will be given one (1) warning. A second violation of this policy will result in the student being counted absent for the class.
- II. The use of any other electronic devices (SUCH AS LAPTOP, IPADS) during class for any purpose not related to the furtherance of the class objectives is strictly prohibited. Students violating this policy will be given one (1) warning. A second violation of this policy will result in the student being counted absent for the class.
- III. Students are expected to follow the AUCA ACADEMIC HONESTY CODE. All types of plagiarism are strictly prohibited. If a student fails to observe this requirement, the instructor may assign an “F” for the work or an “F” for the whole class, depending on the type of assignment and relevant circumstances. Students are expected to read and follow the section on the Student Academic Dishonesty of the AUCA Code of Student Rights, Responsibilities and Conduct.

8. Tentative Course Schedule

Lesson and Topic Schedule

#	Date	Topic
<i>Introduction into Energy Markets. Oil Market</i>		
1	7.09.2017	Introduction Into Energy Markets <ul style="list-style-type: none"> - Overview of the course - Basic concepts in energy resource management
2	7.09.2017	Overview of the Global Oil Market. Economics of Oil. Oil Supply Chain <ul style="list-style-type: none"> - Key statistics - Drivers of demand and supply - Monopoly model - Oil price elasticity - Oil supply chain <p><i>Readings:</i> [1] Chapter 7 pages 153-165; 171 – 174 [?] Petroleum Sector Value Chain</p>
3	14.09.2017	Oil Market Development (1) <ul style="list-style-type: none"> - Pre-OPEC order - Seven sisters <p><i>Readings:</i> “Kazakhstan’s Tanking Economy: Drift and Dissent”. <i>The Economist</i>. January 30, 2016. http://www.economist.com/news/asia/21689647-so-much-nursultan-nazarbayevs-kazakh-dream-drift-and-dissent [3] Hamilton</p>
4	14.09.2017	Oil Market Development (2) <ul style="list-style-type: none"> - OPEC order - Price fluctuations of 1950’s – 1980’s <p><i>Readings:</i> [4] Fattouh [8] Pages 325-349 [2] Chapter 14</p>
5	21.09.2017	Oil Market Industry Analysis <ul style="list-style-type: none"> - Oil and 2008 Crisis - Current oil market - Unconventional oil - Industry analysis discussion <p>* <i>Global Financial Crisis and Oil</i></p> <p><i>Readings:</i></p> <ol style="list-style-type: none"> 1. [14] Inkpen 2. «Oil Companies: In the Dark Ages». <i>The Economist</i>. February 6th, 2016. http://www.economist.com/news/business/21690045-supermajors-suffer-self-inflicted-wounds-well-falling-oil-prices-dark-ages 3. «Saudi Aramco: Sale of the Century?». <i>The Economist</i>. January 9th,

		2016. http://www.economist.com/news/briefing/21685475-possible-ipo-saudi-aramco-could-mark-end-post-war-oil-order-sale
6	21.09.2017	Oil Pricing (1) <ul style="list-style-type: none"> - Theoretical and historical aspects - Development of pricing mechanism <p><i>Readings:</i> [2] Chapter 2 and Chapter 3.1 – 3.3 [1] Pages 383-387 “OPEC Reaches a Deal to Cut Production”. <i>The Economist</i>. 3rd December 2016. http://www.economist.com/news/finance-and-economics/21711088-oil-prices-surge-saudi-arabia-and-iran-sign-deal-opecs-meeting</p>
7	28.09.2017	Oil Pricing (2). Oil Industry Consolidation Case Study <ul style="list-style-type: none"> - Spot and futures markets - Hedging and speculation on oil markets <p><i>Readings:</i> [15] Reinhardt [2] Chapter 3.4 - 3.5 “The Future of Oil”. <i>The Economist</i>. November 26th, 2016. http://www.economist.com/news/special-report/21710628-worlds-use-oil-approaching-tipping-point-writes-henry-tricks-dont-expect</p>
8	28.09.2017	Government Side Management: Energy Policy. Oil Contracts. Dutch Disease. <ul style="list-style-type: none"> - Historical perspective of oil management - Oil contracts: types, features. Government-side perspective. - Dutch disease: implications for the economy <p><i>*Oil and Dutch Disease: Causes and Consequences*</i></p> <p><i>Readings:</i> [17] Musaccio [8] Chapter 19.3 – 19.6 [5] Kyle [1] Chapter 21 [8] Chapter 9</p> <p>«Nigeria's Economy: Hope the Naira Falls». <i>The Economist</i>. January 30, 2016. http://www.economist.com/news/leaders/21689544-president-muhammadu-buhari-repeating-economic-error-he-made-dictator-30-years-ago-hope</p>

9	05.10.2017	<p>Government Side Management: Price Control and Subsidies. Regional Oil Market: CIS. Politics and Oil Nexus Case Study</p> <ul style="list-style-type: none"> - National oil companies - Subsidies and their implications - Price control <p><i>*Oil Policy in KZ and Russia</i></p> <p><i>Readings:</i> [16] Vietor [18] Ka Fu Wong [1] Chapter 4. Pages 71-79 [6] Chapter 9 [6] Chapter 28 [7] Guillaume, D. Zyte, R. Reza Farzin “Glencore Stuns the Oil-Trading Business With a Deal to Take a Big Stake in Rosneft”. <i>The Economist</i>. 10th December 2016. http://www.economist.com/news/business/21711503-sanctions-are-not-impediment-they-were-expected-be-glencore-stuns-oil-trading</p>
10	05.10.2017	<p>Company Side: Oil Contracts, Production, Costs, and Taxes. Local Perspective.</p> <ul style="list-style-type: none"> - Major companies. Historical perspective on supply chain evolution. - Oil contracts: company-side perspective. - Taxes - Producer and consumer surplus - Allocating production over time - Current challenges for oil companies <p><i>* Oil supply in Kyrgyzstan</i></p> <p><i>Readings:</i> [19] Kashagan PSA [20] Absheron in Azerbaijan [5] Kyle [1] Chapter 4. Pages 79-93 [1] Chapter 14 [8] Chapter 7, 8 “A Tricky Time for Oil Producers”. <i>The Economist</i>. November 26th, 2016. http://www.economist.com/news/special-report/21710630-industry-already-suffering-upheaval-part-it-still-denial-tricky</p>
Gas Market		
11	12.10.2017	<p>Introduction into Gas Markets</p> <ul style="list-style-type: none"> - Reserves, production, technology - Biggest producers and consumers - Gas supply chain: pipeline and LNG - Costs of production - Gas trade statistics <p><i>Readings:</i> [8] Chapter 15.1 – 15.4 [8] Pages 205, 208-209,</p>

12	12.10.2017	Regional Gas Market: North America <ul style="list-style-type: none"> - Transaction Cost Economics of Gas - Price volatility - Contracts <i>Readings:</i> [21] <i>Gazprom</i> [1] <i>Chapter 8</i> [2] <i>Chapters 4.2.5 – 4.2.7</i>
13	19.10.2017	Regional Gas Market: Continental Europe <ul style="list-style-type: none"> - Gas market and game theory - Cournot duopoly - Continental pricing <i>Readings:</i> [1] <i>Chapter 10</i> [2] <i>Chapters 4.4</i>
14	19.10.2017	Regional Gas Market: LNG in Asia <ul style="list-style-type: none"> - LNG monopsony model in Japan - LNG production and trade - Pricing <i>Readings:</i> [1] <i>Chapter 9</i> [2] <i>Chapter 4.5</i> <i>“Is Australia Letting Firms Pump Natural Gas Too Cheaply?” The Economist. November 26th, 2016. http://www.economist.com/news/asia/21710851-gas-extraction-tax-bringing-less-revenue-expected-australia-letting-firms-pump</i>
15	26.10.2017	Gas Global Market. Regional Perspective on Gas Trade <ul style="list-style-type: none"> - Netback pricing - Spot prices - Gas in Central Asia <i>* Gas market in Kyrgyzstan: Kyrgyzgas sale transaction</i> <i>*Uzbekistan and Turkmenistan Gas Policy</i> <i>Readings:</i> [8] <i>Chapter 15.5 – 15.7</i>
16	26.10.2017	Midterm Exam
Renewables		
22	23.11.2017	Renewable Energy Sources <ul style="list-style-type: none"> - Historical perspective - Types of renewables - Key statistics - Generation - Costs - Companies - Regulation: global and local perspective - Pricing <i>* Future without fossil fuels: Costa Rica and New Zealand case studies.</i> <i>*Renewables: types; development trends; economic rationale.</i>

		<p><i>Readings:</i> [1] Pages 377 – 383 (costs) [8] Chapter 11 “When Oil is no Longer in Demand”. <i>The Economist</i>. November 26th 2016. http://www.economist.com/news/special-report/21710634-glimpse-post-oil-era-when-oil-no-longer-demand [6] Chapter 19 “Latin America is Set to Become Leader in Alternative Energy”. <i>The Economist</i>. December 10th 2016. http://www.economist.com/news/americas/21711307-power-andean-sun-latin-america-set-become-leader-alternative-energy “A Greener Grid: China’s Embrace of a New Electricity Transmission Technology Holds Lessons for Others”. <i>The Economist</i>. January 14th 2017. http://www.economist.com/news/leaders/21714350-case-high-voltage-direct-current-connectors-chinas-embrace-new</p>
Nuclear Energy		
21	23.11.2017	<p>Nuclear Energy</p> <ul style="list-style-type: none"> - Key statistics - Costs of generation - Value chain - Security concerns <p><i>*Nuclear sector after Fukushima</i></p> <p><i>Readings:</i> [24] Fukushima [1] Pages 371-375 (costs) [9] Pages 9-21; 42-51 [10] Review 2016</p>
Electricity Market		
18	02.11.2017	<p>Introduction into Electricity Market</p> <ul style="list-style-type: none"> - Capacity, technology - Supply chain - Markets <p><i>Readings:</i> [1] Chapter 5 [12] IEA report “The Current Revolution in Transport” <i>The Economist</i>. November 26th. http://www.economist.com/news/special-report/21710635-what-changes-driving-habits-and-improved-batteries-might-do-oil-demand-coming</p>
19	16.11.2017	<p>Electricity Pricing</p> <ul style="list-style-type: none"> - Electricity value chain - Pricing formulae - Management - Regulation <p><i>* Electricity market in Kyrgyzstan</i></p>

		<p><i>Readings:</i> [1] Pages 375 – 377 (costs) [8] Chapter 10</p>
20	16.11.2017	<p>Electricity Regulation: California Crisis Case Study. Central Asian Perspective</p> <ul style="list-style-type: none"> - Regulation of the electricity sector - Comparative analysis of major regulatory models <p><i>* California electricity crisis case study</i> <i>*Comparative analysis: regulatory framework of electricity market in the EU countries and the CIS region.</i></p> <p><i>Readings:</i> [25] Enernoc [1] Chapter 6 [8] Chapter 28 “Electricity Now Flows Across Continents, Courtesy of Direct Current”. <i>The Economist</i>. January 14th 2017. http://www.economist.com/news/science-and-technology/21714325-transmitting-power-over-thousands-kilometres-requires-new-electricity</p>
Coal and Climate Change		
17	02.11.2017	<p>Coal Market</p> <ul style="list-style-type: none"> - Key statistics - Coal trade flows - Perfect competition model in the coal industry <p><i>* Coal Policy in China</i></p> <p><i>Readings:</i> [1] Chapter 3 [8] Chapter 16 [8] Pages 205, 209,</p>
23	07.12.2017	<p>Climate Change Economics</p> <ul style="list-style-type: none"> - Key statistics - Pollution as externality - Implications for energy companies - Global policy - Emissions Trade <p><i>*How real is the climate change? How much does it cost?</i> <i>* How does the Emissions Trading System work? Analysis of efficiency.</i></p> <p><i>Readings:</i> [1] Chapter 12 [6] Chapter 21 [8] Chapter 26 “How Clean is Solar Power?” <i>The Economist</i>. 10th December 2016. http://www.economist.com/news/science-and-technology/21711301-new-paper-may-have-answer-how-clean-solar-power [1] Chapter 11</p>

		<p>[8] Chapter 24-25</p> <p>[11] CO₂ Costs Report</p> <p>“Climate Change in the Era of Trump”. <i>The Economist</i>. 26th November 2016. http://www.economist.com/news/leaders/21710807-or-without-america-self-interest-will-sustain-fight-against-global-warming-climate</p>
24	07.12.2017	<p>Energy Company Strategy and investment Decision Analysis</p> <ul style="list-style-type: none"> - SWOT - Porter’s 5 forces - PEST - Historical perspective on investment: investment / price dynamic - Analysis of energy investment projects - Costs and benefits - Economic vs financial investment analysis - Case study <p><i>Readings:</i></p> <p>[22] Tengiz</p> <p>[23] Iraq</p> <p>[8] Chapter 7</p> <p>“How to Deal With Worries About Stranded Assets”. <i>The Economist</i>. 26th November 2016. http://www.economist.com/news/special-report/21710632-oil-companies-need-heed-investors-concerns-how-deal-worries-about-stranded</p>
25	14.12.2017	Guest Lecture
26	14.12.2017	<p>Future of Energy. Exam Review Session</p> <p>[26] Tesla</p>

15 – 25 December **End-Term Exam**

9. Reading Materials

Compulsory readings:

[1] Dahl, C. (2015). *International Energy Markets: Understanding Pricing, Policy, and Profits*. 2nd edition. PennWell Publishing.

[2] *Putting a Price on Energy: International Pricing Mechanisms for Oil and Gas*. Energy Charter Secretariat. (2007). Brussels. Belgium

Additional readings:

[3] Hamilton, J. (2011). *Historical Oil shocks*. NBER Working Papers. Cambridge

[4] Fattouh, B. (2007). *OPEC Pricing Power: The Need For a New Perspective*. Oxford Institute for Energy Studies.

[5] Kyle, J. *What Can We Learn From Oil Contracts?*

[6] Goldthau, A. (2013). *The Handbook of Global Energy Policy*. Wiley-Blackwell.

[7] Guillaume, D. Zyttek, R. Reza Farzin. (2011). *Iran – The Chronicles of the Subsidy Reform*. IMF Working Paper.

[8] Bhattacharyya, S. (2011). *Energy Economics: Concepts, Issues, Markets and Governance*.

[9] *Technology Roadmap: Nuclear Energy*. 2015 edition. International Energy Agency.

[10] *Nuclear Technology Review 2016*. IAEA General Conference.

- [11] *The cost of CO₂ Capture, Transport, and Storage (2012). European Technology Platform for Zero Emissions Fossil Fuel Power Plants.*
- [12] *Secure and Efficient Electricity Supply (2014). International Energy Agency.*
- [13] *Petroleum Sector Value Chain (2009). World Bank Group*
- [14] *Inkpen, Andrew C. (2016). The Global Oil and Gas Industry. Thunderbird School of Global Management*
- [15] *Reinhardt Forest (2010). BP and the Consolidation of the Oil Industry Case Study. Harvard Business Review.*
- [16] *Vietor R. (2003). World Oil Markets. Harvard Business School*
- [17] *Musaccio A. (2010). Angola and the Resource Curse. Harvard Business School*
- [18] *Ka Fu Wong. Long Lines, Lost Profits: China's Regulated Fuel Markets. Asia Case Research Center.*
- [19] *Esty B. (2013). The Kashagan PSA. Harvard Business Review*
- [20] *Absheron Project: BP PSA in Azerbaijan. (2016). Darden Business Publishing.*
- [21] *Gazprom: Evolution of the Giant. Thunderbird School of Global Management*
- [22] *Moffeit M. Caspian Oil: Tengiz. Thunderbird School of Global Management*
- [23] *Talisman Inc.: Decision to Enter Iraq. Richard Ivey School of Business*
- [24] *Fukushima NPS. (2012). IESE Business School*
- [25] *Enernoc: Turning Energy Savings into Sales. (2009). Babson*
- [26] *Tesla: Internationalization from Singapore to China (2015). Richard Ivey School of Business.*

Supplementary Readings:

In addition, students will be assigned readings from current periodicals, as they become available. Students are strongly encouraged to keep up-to-date with current events relating to energy markets with The New York Times, The Wall Street Journal, and The Economist. These readings will help to expand the students' understanding of energy economics and management beyond that of conventional textbooks. Students are to treat these additional readings as required readings.