



# EXTENDED CAMPUS

COLLEGE of PROFESSIONAL  
and CONTINUING STUDIES

## **ECON 5990-106: Special Studies: International Energy Markets**

### **Course Description:**

This course covers the topics related to the economic analysis of the U.S. and international energy industry and energy policy issues. Specific topics will include introductions to energy information and data, energy demand and supply analyses, various energy sectors, energy market structures, energy pricing, and energy policy in the domestic and international contexts. We will specifically investigate the topics in the international oil markets and OPEC, the U.S. natural gas markets, Japan and the Asia-Pacific LNG market, and the European energy markets. Various other topics such as energy risk management, energy regulation, and energy security may be covered as well.

### **Class Dates, Location and Hours:**

Dates: August 12 – 18, 2019

Location: Washington, D.C. Liaison Office - 2189 Crystal Plaza Arcade, Arlington, VA, 22202.

Hours: Monday - Friday 6:00 p.m.-9:30 p.m.; Saturday 8:00 a.m.-4:30 p.m.; Sunday 8:00 a.m.-12:00 p.m.

Last day to enroll or drop without penalty: July 14, 2019

### **Site Director:**

Email: [apwashington@ou.edu](mailto:apwashington@ou.edu). Phone: 703-418-4800.

### **Professor Contact Information:**

Course Professor: Zhen Zhu, Ph.D.

Mailing Address: Department of Economics  
College of Business  
University of Central Oklahoma  
100 N. University Drive  
Edmond, OK 730734

Telephone Number: 405-321-8693

E-mail Address: [zzhu@uco.edu](mailto:zzhu@uco.edu)

Professor availability: The professor will be available via email to students before and after the class sessions. On-site office hours are half an hour before and after each class session, by appointment.

### **Textbook(s) and Instructional Materials:**

Student materials are available at the OU Bookstore Website at <https://ou.textbookx.com/institutional/index.php>. There is no longer a physical bookstore, the store will remain, but textbooks will not be stocked. The website has book selling, renting, buying, returning, and order tracking capabilities. If you need help with an order, or if you have any questions contact the toll-free phone at 1-(855)-790-6637, agents are available from 9a – 5p (EST) Monday – Friday. For more information or questions about textbooks, feel free to contact [apsyllabi@ou.edu](mailto:apsyllabi@ou.edu). Text prices are available online

1. Dahl, C.A. (2015). *International energy markets: Understanding pricing, policies and profits* (2<sup>nd</sup> ed.). Tulsa, OK: PennWell, 2015. ISBN 9781593702915.
2. Bhattacharyya, S.C. (2011). *Energy economics: Concepts, issues, markets and governance*. New York: Springer. ISBN 9780857292674.
3. Inkpen, A.C., & Moffett, M.H. (2001). *The global oil & gas industry: Management, strategy, and finance*. Tulsa, OK: PennWell. ISBN 9781593702397.

### **Course Objectives:**

The course provides an introduction to the U.S. and international energy industry and more in-depth analysis of the fundamental energy economic issues faced by today's world energy industries especially the oil and gas industries. At the end of the class, students will be able to:

- identify the sources of international energy data
- understand the basics of international energy markets and their structures
- perform fundamental economic analysis of energy supply and demand, and their prices
- understand the rationales behind the domestic and international energy policies

### **Course Outline:**

1. Energy demand analysis
  - a. Energy data and information
  - b. Understanding and analyzing energy demand
  - c. Energy demand management
2. Energy supply analysis
  - a. Energy investment
  - b. Fossil fuel supply economic analysis
  - c. Electricity supply analysis
  - d. Renewable and alternative energy supply
3. Oil market and international oil market issues
  - a. Oil market basics
  - b. International oil market introduction
  - c. Historical perspectives
  - d. OPEC
  - e. Future of oil
  - f. Some additional issues
  - g. Alternatives to oil
4. Natural gas market issues
  - a. Gas supply
  - b. End users and the physical system
  - c. Gas system operations, market participants
  - d. Service options
  - e. Gas market regulation and deregulation
  - f. Market dynamics
  - g. Cost of capital for utilities
5. Electricity markets
  - a. Electricity basics
  - b. Modeling the markets
  - c. Natural monopoly and government policy
  - d. Rate of return regulation and utility rate cases
6. Perfect competition and the coal industry
  - a. Introduction
  - b. Perfect competition
  - c. Demand and supply

- d. pricing
- 7. Introduction to Japan and Asia-Pacific LNG Market
  - a. LNG production and trade
  - b. LNG monopsony on input market, competitor on output market
  - c. Modeling of prices
  - d. Bargaining and negotiation
- 8. Introduction to the European energy markets
  - a. Coal and oil consumption
  - b. Coal and oil production
  - c. Natural gas markets
  - d. Primary electricity
  - e. European market structure
  - f. Pricing models for European energy markets
- 9. Other possible topics
  - a. Energy risk management
  - b. Energy securities
  - c. Environmental issues related to energy
  - d. Effect of high energy prices
  - e. Energy consumption and economic growth

**Assignments, Grading and Due Dates:**

**Readings:**

Students should read broadly on energy and international energy related topics before the beginning of the class.

**Final Examination**

A two-hour in-class closed-book examination will be given the last day of class.

**Post Seminar Assignment:**

Students will be required to write a term paper on any **International Energy/Energy Economics related topic** with the permission of the course professor. The term paper must be at least 15 pages in length with appropriate citation, etc. **September 1, 2019**

**Grading:**

This is a letter-graded course: A, B, C, D, or F.

Assignment	Percent of Grade
Final Exam	70%
Post Seminar Assignment	30%
Total	100%

**Notice:** Failure to meet assignment due dates could result in a grade of I (Incomplete) and may adversely impact Tuition Assistance and/or Financial Aid.

## **POLICIES AND NOTICES**

### **Attendance/Grade Policy**

Attendance and participation in interaction, individual assignments, group exercises, simulations, role playing, etc. are valuable aspects of any course because much of the learning comes from discussions in class with other students. It is expected that you attend all classes and be on time except for excused emergencies.

Excused absences are given for professor mandated activities or legally required activities such as emergencies or military assignments. It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays. Unavoidable personal emergencies, including (but not limited to) serious illness; delays in getting to class because of accidents, etc.; deaths and funerals, and hazardous road conditions will be excused.

If you are obtaining financial assistance (TA, STAP, FA, VA, Scholarship, etc.) to pay all or part of your tuition cost, you must follow your funding agency/institution's policy regarding "I" (Incomplete) grades unless the timeline is longer than what the University policy allows then you must adhere to the University policy. Students who receive Financial Aid must resolve/complete any "I" (Incomplete) grades by the end of the term or he/she may be placed on "financial aid probation." If the "I" grade is not resolved/completed by the end of the following term, the student's Financial Aid may be suspended making the student ineligible for further Financial Aid.

Students are responsible for meeting the guidelines of Tuition Assistance and Veterans Assistance. See the education counselor at your local education center for a complete description of your TA or VA requirements.

### **Academic Integrity and Student Conduct**

Academic integrity means honesty and responsibility in scholarship. Academic assignments exist to help students learn; grades exist to show how fully this goal is attained. Therefore all work and all grades should result from the student's own understanding and effort.

Academic misconduct is any act which improperly affects the evaluation of a student's academic performance or achievement. Misconduct occurs when the student either knows or reasonably should know that the act constitutes misconduct. Academic misconduct includes: cheating and using unauthorized materials on examinations and other assignments; improper collaboration, submitting the same assignment for different classes (self-plagiarism); fabrication, forgery, alteration of documents, lying, etc...in order to obtain an academic advantage; assisting others in academic misconduct; attempting to commit academic misconduct; destruction of property, hacking, etc...; intimidation and interference with integrity process; and plagiarism. All students should review the Student's Guide to Academic Integrity at [http://integrity.ou.edu/students\\_guide.html](http://integrity.ou.edu/students_guide.html)

Students and faculty each have responsibility for maintaining an appropriate learning environment. All students should review policies regarding student conduct at <http://studentconduct.ou.edu/>

### **Accommodation Statement**

The University of Oklahoma is committed to making its activities as accessible as possible. For accommodations on the basis of disability, please contact your local OU Site Director.

### **Adjustment for Pregnancy/Childbirth-Related Issues**

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see <http://www.ou.edu/content/eoo/faqs/pregnancy-faqs.html>.

### **Title IX Resources**

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24/7, counseling services, mutual no-contact orders, scheduling adjustments, and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office at [smo@ou.edu](mailto:smo@ou.edu) or (405) 325-2215 (8-5), or the Sexual Assault Response Team at (405) 615 -0013 (24/7) to report an incident. To learn more about Title IX, please visit the Institutional Equity Office's website at <http://www.ou.edu/content/eoo.html>

### **Course Policies**

Advanced Programs policy is to order books in paperback if available. Courses, dates, and professors are subject to change. Please check with your OU Site Director. Students should retain a copy of any assignments that are mailed to the professor for the course. Advanced Programs does not provide duplicating services or office supplies.

Any and all course materials, syllabus, lessons, lectures, etc. are the property of professor teaching the course and the Board of Regents of the University of Oklahoma and are protected under applicable copyright.

For more information about Advanced Programs, visit our website at: <http://www.goou.ou.edu/>

## INSTRUCTOR VITA

Zhen Zhu, Ph.D.

### Education

1994 Ph.D. in International Economics, Macroeconomics, Econometrics, University of Michigan

### Current Positions

- Advanced Programs professor since 1997
- Dr. Michael Metzger Endowed Chair, Professor of Economics, University of Central Oklahoma

### Frequently Taught Advanced Programs Courses

- Economics 5613 International Economics - Trade
- Economics 5633 International Economics – Finance
- Economics 5073 Contemporary Economic Policy and Analysis

### Major Areas of Teaching and Research Interest

- International Financial Market
- Energy Markets (especially natural gas markets)

### Representative Publications and Presentations

- “Chinese Natural Gas Market: Huge but Beset with Difficulties.” *Natural Gas and Electricity*, July 2018, Volume 34, Number 12, pp. 1-7.
- “Cost of Natural Gas in Eastern Chinese Markets: Implications for LNG Imports,” with Yue Wang, *Energy Forum*, International Association for Energy Economists, 2018:1, pp. 13-20.
- “What motivates merger and acquisition activities in the upstream oil & gas sectors in the U.S.?” with Kuang-Chung Hsu, Michael Wright. *Energy Economics*, pp. 240-250, June 2017.
- “Controlling for Relevant Variables: Energy Consumption and Economic Growth Nexus Revisited in an EGARCH-M Model”, with Song Zan Chiou Wei, *Energy*, Vol. 109, 391-399, August 2016.
- “A Meta-Analysis of the Energy Consumption-Economic Growth Nexus,” with Song Zan Chiou Wei, *International Journal of Economics and Social Sciences*, April 2015.
- “Forecasting Natural Gas Consumption: China and Japan,” with Chiou Wei Song Zan, Fanbei Zhou, *Asia-Pacific Economic and Management Review*, Vol. 18, No. 1, September 2014, 65-84.
- “Is the Stock Market Sticker Shocked? A Study of Market Response to CAFE Regulations in the U.S.,” with Mariya Berdina, Michael Wright, *Applied Economics*, 2014.
- “The response of U.S. natural gas futures and spot prices to storage change surprises: Fundamental information and the effect of escalating physical gas production,” with Chiou Wei Song Zan and Scott Linn, *Journal of International Money and Finance*, 2014, Vol. 42, 156-173.
- “An Economic Analysis of Wind Generation Capacity,” *International Journal of Economics and Social Sciences*, with Joe Johnson and Cody Woods, Spring, 2013
- “The Equivalent Risk Standard and Allowed ROEs in the Gas and Electric Utility Industries,” with Don Murry and Mike Knapp, *Journal of Applied Economics and Policy*, 2011, Volume 30, Number 1, 47-60.
- “The Roles of Speculation and Fundamentals in Commodity Markets: The Case of U.S. Natural Gas Market,” with Mengzhu Ji, Hai Lin, *Review of Futures Markets*, 2011, Volume 19, Issue 3, 217-246.
- “Price Dispersion in a Model with Middlemen and Oligopolistic Market Makers: A Theory and an Application to the North American Natural Gas Market,” with J.D. Ju, Scott Linn, *Journal of Economic and Management Strategies*, Volume 19, Number 1, Spring 2010, 1–23.
- “An Empirical Examination of the Impacts of Natural Gas Prices and LNG Transport Costs on the Dynamics of LNG Import Demand,” with Don Maxwell, forthcoming in *Energy Economics*.

- “Stock Market Volatility and Commission Deregulation: Further evidence from Japanese Stock Markets,” with Shinhua Liu, *Journal of Financial Services Review*, August 2009, V 36, issue 1, 65-83.
- “Government Size and Economic Growth: An Application of the Smooth Transition Regression Model,” with Chiou Wei Song Zan and Yung-Hsing Kuo, *Applied Economics Letters*, 2010, Vol.17, 1405–1415
- “GDP Growth and Energy Consumption Revisited: Evidence from Linear and Nonlinear Granger Causality,” with Song Zan Chiou Wei and Ching-Fu Chen, *Energy Economics*, Volume 30, Issue 6, November 2008, Pages 3063-3076.
- “A revisit to the outward FDI determinants: further evidence from count panel data models with fixed effects,” with Song Zan Chiou Wei, *Applied Economic Letters*. August-October 2007, v. 14, issue 10-12, pp. 809-12.
- “Volatility Impact of Political and Economic Events on Stock Prices: Empirical Evidence from Taiwan,” with Song Zan Chiou Wei, *India Economic Journal*, Vol. 55, Number 3, Oct-Dec 2007, page 24-39.
- “Commodity convenience yield and risk premium determination: the case of the U.S. natural gas market,” *Energy Economics*, 2006.
- “Asymmetric Price Responses, Market Integration and Market Power: A Study of the U.S. Natural Gas Marke,” with Don Murry, *Energy Economics*, Vol. 30, page 748-765, 2008.
- "Storage Announcement and Natural Gas Futures Market Volatility," with Scott Linn, *Journal of Futures Market*, March 2004, v. 24, iss. 3, pp. 283-313.
- “EnronOnline and Informational Efficiency in the U.S. Natural Gas Market,” with Don Murry, *The Energy Journal*, v. 25, iss. 2, 2004 57-74.
- “Equality of Interest Rates Revisited: The Multi-Country Evidence,” with Chiou Wei Song Zan, *International Economic Journal*, June 2004, v. 18, iss. 2, pp. 245-57.
- “Sri Lanka's Experiment with Devaluation: VAR and ECM Analysis of the Exchange Rate Effects on Trade Balance and GDP,” with De Silva, Dakshina G.; *International Trade Journal*, Winter 2004, v. 18, iss. 4, pp. 269-301.
- "Time-Varying Forward Bias and Expected Excess Returns," *Journal of International Financial Markets, Institutions and Money*, 2002.
- “Sources of Export Fluctuations: Empirical Evidence from Taiwan and South Korea, 1981-2000”, with Chiou Wei Song Zan, *Journal of Asian Economies*, 2002.

### **Representative Honors and Awards Received**

- Transformative Learning Scholar, UCO 2014 to present
- Barnabas Fellow, UCO, 2011-2012
- McGraw-Hill/Irwin Distinguished Paper Award, Southwest Society of Economists, 2006
- Exemplary Service Award, UCO Economics Department, 2004
- Faculty Research Merit Award, UCO, 2003, 2007, 2011
- Distinguished Researcher of the Year, College of Business, UCO, 2002
- Research Fellow, Financial Research Institute, University of Missouri, 2001, 2002
- Hauptman Fellow for Research Excellence, UCO, 2001