THE UNIVERSITY OF THE WEST INDIES
ST.AUGUSTINE

General Information Summary

Course title	Energy Economics
Course code	ECON 3067
Course type	Elective
Level	Undergraduate, Year 3
Semester	1
Course Start Date	Wednesday 4th September, 2019
Faculty and Department	Faculty of Social Sciences Department of Economics
Credits	3
Teaching Methods	Lectures Tutorials
Estimated Study Hours	Lectures - Two contact hours per week Tutorials - One contact hour per week Personal Study - Two hours per week
Total no. of assessments	3 Assessments → 1 Quiz → 1 Written Coursework Essay → 1 Tutorial Presentation
Instructor information	Janelle D. Spencer janelle.spencer@sta.uwi.edu Michael John michael.john@sta.uwi.edu

Course Overview

1. Course Description

This course introduces students to the economics of the energy sector on a micro level. It is geared to providing the basic knowledge and introductory skills required as a foundation for research in the area of energy analysis and policy.

It will cover themes such as:

- The demand for and supply of renewable and non-renewable energy,
- Exploration, production, transportation, processing / refining and marketing of fossil fuels,
- Energy pricing and markets,
- Introduction to Energy and the Economics of the Environment.

2. Course Rationale

The energy sector's contribution to the world's economy continues to grow in importance. Tertiary level students should have an appreciation for the sector and its impact on their lives, the economy and the environment. This course is designed to introduce students to basic energy issues, and allow them to better understand the energy business by introducing the tools required for energy analysis and providing its microeconomic foundations.

3. Course Goal

At the end of this course a student's view on energy issues will change as they come to a greater appreciation of the intricate fundamentals of energy industry and its far reaching impacts.

4. Learning Outcomes

Upon successful completion of this course students will be able to:

1. Explain the importance of energy statistics and analyze energy balances.
2. List alternative approaches for energy demand analysis.
3. Evaluate the different approaches to energy demand forecasting.
4. Define and critique the justification for demand side management.
5. Explain the main characteristics of energy projects.
6. Differentiate and describe activities in exploration, development and production of fossil fuels.
7. List challenges associated with energy efficiency.
8. Perform simple valuations of crude delivered to a refinery.
9. Examine the role of OPEC in the petroleum market.
10. Understand different energy pricing mechanisms and taxation systems.
11. Compare and contrast the options to address energy related environmental problems.

Course Assessment

Alignment of Assessment with Learning Outcomes

Assessment Method	Learning Outcomes (Corresponds to list in Section 4)											Weighting	Assessment Description	Duration
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11			
Oral Tutorial Presentation	X	X	X	X	X	X	X	X	X	X	X	10%	In-course Assessment	10 – 15 minutes
Quiz	X	X	X	X	X	X	X					20%	In-course assessment	1 hour & 30 minutes
Essay	X	X	X	X	X	X	X					10%	In-course Assessment	2 weeks to prepare
Extended Response Questions	X	X	X	X	X	X	X	X	X	X	X	60%	Final Examination	2 hours

Teaching Strategy

Lectures: Lectures will be delivered through descriptive face to face discourses carried out with the aid of PowerPoint presentations, videos and interactive class discussions. Lectures will be conducted on Wednesdays between 5:00 – 7:00 p.m. Additional information, resources and activities will be shared online via the "myelearning" portal. Students should login to the site regularly to access this material and participate in discussions when applicable.

Tutorials: Tutorial sessions take place every week and students are required to attend the most convenient session and prepare responses to tutorial assignments for discussion during the session. Students may also be grouped and required to prepare a question to present to their tutorial class. All students are expected to participate fully in these sessions. The tutor will maintain an attendance record which will be kept as part of the Department's records.

Recommended Textbooks

Required/Essential

- Main Text: Bhattacharyya, Subes C.: ***Energy Economics Concepts, Issues, Markets and Governance***, Springer-Verlag, 2011.
- Boopsingh, T & McGuire, G***: From Oil to Gas and Beyond,*** University Press of America, 2014.
- All additional readings and resources will be posted on My E-learning.

Course Calendar

Week	Topics	Readings/Resources	Activities (including assessments)
1.	Overview and Introduction to Energy Economics	• Bhattacharyya S.C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag., 2011 Chapter 1 & 2 • Bhattacharyya S.C.: Energy Sector Management Issues: An Overview, International Journal of Energy Sector Management 1(1):13-33. • IEA(2004) Energy Statistics Manual Chapters1& 7, Annexes 1,-3 • UN (2011) International Recommendations for Energy Statistics,	• Outline of the course and the requirements for success. • Introductory Lecture. • Class discussion on energy prices, OPEC production cuts and geopolitical unrest.
2.	Energy Demand Analysis & Demand Forecasting	• Bhattacharyya S.C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag., 2011 Chapter 3 – 5 • Bhattacharyya, S C. and Timilsina, G R. Energy demand models for policy formulation: a Comparative Study of Energy Demand Models, World Bank Policy Research Working paper WPS 4866 (2009) • Bhattacharyya, S C. and Timilsina, G R. A Review of Energy systems models International Journal of Energy Sector Management 4(4) 2010, 494-518 • EIA: Model Documentation http://www.eia.gov/tools/models/models.cfm • Mehra M, Bharadwaj A. (2000) Forecasting the Demand for Electricity	• Lecture 1 Review Exercise to assess knowledge. • Sankey Diagram Assignment Review. • Lecture.
3.	Demand Management	• Bhattacharyya, S.C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag, 2011 Chapter 6 • CSPM Economic Analysis Of Demand-Side Programs and Projects Califonia Standard Practice Manual, Califonia USA. 2001 • CRA: Primer on Demand side management, With special emphasis on price responsive programmes Charles River Associates, Califonia (2005) • IEA: Energy Efficiency Governance (2010) • EC: GREEN PAPER on Energy Efficiency or Doing More With Less	• Lecture 2 Review Exercise. • Lecture. • **Tutorials Begin.**

Week	Topics	Readings/Resources	Activities (including assessments)
4.	Supply Economics - Energy Investment Analysis	• Bhattacharyya, S.C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag, 2011 Chapter 7 – 11 • Asian Development Bank : Key Areas of Economic Analysis of Projects, ADB 2003 • Asian Development Bank: Guidelines for the Economic Analysis of Projects, 1977 • IEA Overseas Investments by Chinese National Oil Companies: Assessing the drivers and impacts	• Lecture 3 Review Exercise. • Lecture. • Individual Tutorial Presentations.
5.	Supply Economics - Economics of Fossil Fuel Supply	• Bhattacharyya, S.C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag, 2011 Chapter 7 – 11 • Boopsingh, Trevor; Oil and Gas Development – A View from the South 1988 Chap 3 & 4. • Historical Facts on the Petroleum Industry of Trinidad and Tobago – GSTT http://www.thegstt.com/education/history-of-trinidads-oil/	• Lecture 4 Review Exercise. • Lecture. • Individual Tutorial Presentations.
6.	Supply Economics - Economics of Electricity Supply	• Bhattacharyya, S.C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag, 2011 Chapter 10 • Srivastava, A.K , Kamlasadan, D.P, Sankar, S. & Al-Olimat K.S. Electricity Markets : An Overview and comparative Study, International Journal of Energy Sector Management, 2007 Vol. 5 (2) pp. 169-200. • Anderson D.: Electricity Generation Costs & Investment Decisions: A Review UK Energy Research Centre Working Paper Feb 2007.	• Lecture 5 Review Exercise. • Lecture. • Quiz Prep. • Individual Tutorial Presentations.
7.	Supply Economics - Refining and Transportation of fossil fuels	• Tom Meisner: A Practical Guide to US Natural Gas Transmission Pipeline Economics, Oil and Gas Journal Research Centre/Penn Energy, 2009. • Pirog, Robert L: Petroleum Refining: Economic Performance and Challenges for the Future, Congressional Research Service, The Library of Congress.	• Lecture 6 Review Exercise. • Individual Tutorial Presentations.
8.	**QUIZ**		• **Coursework Quiz.** • Tutorials.

Week	Topics	Readings/Resources	Activities (including assessments)
9.	Essay Topic Distribution & Preparation		• Quiz Feedback. • Essay Topic Prep. • Individual Tutorial Presentations.
10.	Energy Markets - Pricing and Taxation	• Bhattacharyya, S.C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag, 2011, Chapter 12 – 16 • McGuire, Gregory Understanding Gas Prices Mimeo UWI 2003 • Bhattacharyya, S.C.: Determinants of Energy Prices in World Energy Report 2005, RWE,	• Lecture. • Individual Tutorial Presentations.
11.	Energy Markets - Oil and Gas Markets	• Stevens P. The Shale Gas Revolution Developments and Changes, Chatham House, 2012 • Stern J and Rogers H Transition to Hub based Gas Pricing in Continental Europe, Oxford Institute for Energy Studies, 2011 • Julius De Anne and Afsanah Mashayeki The Economics of Natural Gas: Pricing Planning and Policy Chaps 1-3 • McGuire, G. : Crisis and Aftermath – An Assessment of Petroleum Policy in Trinidad and Tobago 1973-80. Chap 4 • Fattouh, Bassam, Kilian L. & Mahadeva Speculation in Oil Markets: What we have learned so far? Oxford Institute for Energy Studies, 2012	• Lecture 10 Review Exercise. • Lecture. • Tutorials. ***Coursework Essays Due***
12.	Energy and the Environment	• Bhattacharyya S C.: Energy Economics Concepts, Issues, Markets and Governance, Springer-Verlag, 2011 Chapter 23-25 • Panayotou T. Economic Instruments for environmental management and sustainable development, UNEP Paper 16 • UNEP Global Environmental Outlook 3, 2002 • Shahrin A and Naili A.M.A Introduction to Environmental Kuznets Curve	• Lecture 11 Review Exercise. • Lecture. • Essay Feedback. • Tutorials.
13.	Revision Lecture		• Revision Lecture. • Exam Prep.

Additional Information

Students are reminded of the University's Examination Regulations:

Examination Regulations for First Degrees, Associate Degrees, Diplomas and Certificates including GPA Regulations

General Examination Regulation

19. Any candidate who has been absent from the University for a prolonged period during the teaching of a particular course for any reason other than illness or whose attendance at prescribed lectures, classes, practical classes, tutorials, or clinical instructions has been unsatisfactory or who has failed to submit essays or other exercises set by his/her teachers, may be debarred by the relevant Academic Board, on the recommendation of the relevant Faculty Board, from taking any University examinations. The procedures to be used shall be prescribed in Faculty Regulations.

97.

(i) Cheating shall constitute a major offence under these regulations

(ii) Cheating is any attempt to benefit one's self or another by deceit or fraud.

(iii) Plagiarism is a form of cheating.

(iv) Plagiarism is the unauthorized and/ or unacknowledged use of another person's intellectual effort and creations howsoever recorded, including whether formally published or in manuscript or in typescript or other printed or electronically presented form and includes taking passages, ideas or structures from another work or author without proper and unequivocal attribution of such source(s), using the conventions for attributions or citing used in this University.

103.
(i) If any candidate is suspected of cheating, or attempting to cheat, the circumstances shall be reported in writing to the Campus Registrar. The Campus Registrar shall refer the matter to the Chairman of the Campus Committee on Examinations. If the Chairman so decides, the Committee shall invite the candidate for an interview and shall conduct an investigation. If the candidate is found guilty of cheating or attempting to cheat, the Committee shall disqualify the candidate from the examination in the course concerned, and may also disqualify him/her from all examinations taken in that examination session; and may also disqualify him/her from all further examinations of the University, for any period of time, and may impose a fine not exceeding Bds$300.00 or J$5000.00or TT$900.00 or US$150.00 (according to campus). If the candidate fails to attend and does not offer a satisfactory excuse prior to the hearing, the Committee may hear the case in the candidate's absence.

Students are also reminded of the University's Grading Policy:

The University's 2014/2015 Grading System will apply.

The University of the West Indies (UWI) strives to remain a premier institution of higher learning and continuously reviews its practices, procedures, and protocols to ensure that they are of world class quality. In an effort to align the standards of the university more closely with international norms that reflect best practice, a new grading policy was introduced from the beginning of the 2014/2015 academic year. Changes under the new policy include adjustments to the grade bands, quality points and associated percentage marks.

The Board of Undergraduate Studies (BUS) in its continuing review of the GPA scheme, has with effect from 1st August 2016, adjusted the failing grade bands to reduce, inter alia, the impact that a F3 grade would have on a student's GPA.

Under the 2014/2015 Grading Policy, a new passing mark of 50% has been implemented and replaces the previous passing mark of 40%. Students will now be required to earn a minimum mark of 50% to pass a course.

Changes have been made to the undergraduate failing grades with effect from the 2016/2017 academic year as follows

- Pass mark changed from 40% to 50%. Students must earn a minimum of 50% to pass a course
- 'C' is now the minimum pass mark
- 'C-', 'D+' and 'D' letter grades have been eliminated
- Three levels of failures are introduced as letter grades 'F1', 'F2' and 'F3'
- Letter grades 'F1' and 'F2' are assigned quality points of 1.7 and 1.3 respectively
- The mark % range for all grades has been changed.
- The mark % range for three levels of failures for the 2014/2015 Grade Policy were adjusted:
    - 'F1' from 45-49 to 40-49
    - 'F2' from 40-44 to 30-39
    - 'F3' from 0-39 to 0-29

More information can be found: http://www.uwi.edu/gradingpolicy/index.html