

The University Of Toledo

New Graduate Course Proposal

* denotes required fields

1. College*:

Department*:

2. Contact Person*: Phone: (xxx - xxxx) Email:

3. Alpha/Numeric Code (Subject area - number)*: -

4. Proposed title*:

Proposed effective term*: (e.g. 201140 for 2011 Fall)

5. Is the course cross-listed with another academic unit? Yes No

Approval of other academic unit (signature and title)

Is the course offered at more than one level? Yes No

If yes, an undergraduate course proposal form must also be submitted. If the undergraduate course is new, complete the [New Undergraduate Course Proposal](#); if the undergraduate course is existing, submit an [Undergraduate Course Modification Proposal](#).

6. Credit hours*: Fixed: or Variable: to

7. Delivery Mode:	Primary*	Secondary	Tertiary
a. Activity Type *	<input type="text" value="Lecture"/>	<input type="text" value="--SelectType--"/>	<input type="text" value="--SelectType--"/>
b. Minimum Credit Hours *	<input type="text" value="4"/>	<input type="text"/>	<input type="text"/>
Maximum Credit Hours *	<input type="text" value="4"/>	<input type="text"/>	<input type="text"/>
c. Weekly Contact Hours *	<input type="text" value="4"/>	<input type="text"/>	<input type="text"/>

8. Terms offered: Fall Spring Summer

Years offered: Every Year Alternate Years

9. Are students permitted to register for more than one section during a term? No Yes

May the courses be repeated for credit?

No Yes

Maximum Hours

10. Grading System*:
- Normal Grading (A-F, S/U, WP/WF, PR, I)
 - Satisfactory/Unsatisfactory (A-C, less than C)
 - Grade Only (A-F, WP/WF, PR, I)
 - Audit Only
 - No Grade

11. Prerequisites (must be taken **before**): i.e. C or higher in (BIOE 4500 or BIOE 5500) and C or higher in MATH 4200

ECON 1150 OR ECON 1200

PIN (Permission From Instructor)

PDP (Permission From Department)

Co-requisites (must be taken **together**):

12. Catalog Description* (75 words Maximum)

This course explores the theoretical and empirical perspectives on the demand and supply sides of the energy markets. This course starts with an energy outlook in both domestic and global scales. Then it discusses the natural resource modelling, energy supply, and the behavioral underpinnings of the energy demand. The course continues with current and historical aspects of national and global markets for oil, natural gas, coal, electricity, nuclear power, and renewable energy.

13. Attach a syllabus - a syllabus template is available from the University Teaching Center. Click [here](#) for the Center's template.

File Type	View File
Syllabus	View

14. Comments/Notes:

This course is also offered at the 4000 level. However, note that this 5000 level course is 4 credits while the 4000 level is only 3 credits. Thus there is an extra grad. hour just for the grad. students. Also, the grad. students will receive different syllabus, home works, exams, etc.

15. Rationale:

For many countries their ability to extract fossil fuels is the single greatest source of wealth generation. And with new technological advances in extraction the world has more access to fossil fuels than ever before. Yet, technological advances in renewable sources of energy are now making wind and solar cost-competitive with traditional sources of energy. And the study of energy economics is now more important than ever to study the interactions of energy and climate change. This course will cover all this ground and be of interest to economics students as well as a broad swath of other disciplines such as engineering, environmental science, and political science, to name a few. This course has the principles of economics as a prereq. as this is a 4000 level course that will more rigorously use the economics toolbox in theory and practice to discuss Energy Economics.

Course Approval:

Department Curriculum Authority:	Olugbenga Ajilore	Date	2017/01/21
Department Chairperson:	Michael Dowd	Date	2017/03/08
College Curriculum Authority or Chair:	David Black	Date	2017/04/14
College Dean:	Barbara Schneider	Date	2017/07/24
Graduate Council:	Andrea Kalinoski (GC 10.31.2017)	Date	2017/11/02
Dean of Graduate Studies:	Amanda C. Bryant-Friedrich	Date	2017/11/02
Office of the Provost :		Date	

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Administrative Use Only**Effective Date:**  (YYYY/MM/DD)**CIP Code:****Subsidy Taxonomy:****Program Code:****Instructional Level:****Registrar's Office Use Only****Processed in Banner on:** **Processed in Banner by:****Banner Subject Code:****Banner Course Number:****Banner Term Code:****Banner Course Title:**

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UNIVERSITY OF TOLEDO
DEPARTMENT OF ECONOMICS

ECON 5280
Energy Economics

Instructor: Dr. Onur Sapci
Office: UH 4140E
Telephone: Department: 419 - 530 - 4677
Office Hours: TBA
E-Mail: onur.sapci@utoledo.edu

Course Web Page: <https://blackboard.utdl.edu>

Prerequisites:

Students should have completed ECON 1150 or ECON 1200

Course Description:

This course explores the theoretical and empirical perspectives on the demand and supply sides of the energy markets. This course starts with an energy outlook in both domestic and global scales. Then it discusses the natural resource modelling, energy supply, and the behavioral underpinnings of the energy demand. The course continues with current and historical aspects of national and global markets for oil, natural gas, coal, electricity, nuclear power, and renewable energy.

Course Objective:

Energy products are the world's most important commodities. Energy is a key economic input for consumers and producers. The objective of this course is to describe the evolution of energy markets and the technological, commercial, and political innovations shaping the world energy industry. This knowledge is vital in achieving a more complete understanding of the role of energy in international affairs and economic development.

By the end of the semester, students should be able to use the key concepts in energy economics introduced in this class, along with the corresponding theoretical and empirical models. They will also be able to apply these concepts to a wider array of energy problems. The course will also provide factual knowledge on the current state of energy policy and the theoretical basis (or lack thereof) for proposed and enacted policy.

This course will cement the concepts of intermediate economics by applying them to energy issues and policy as well as lay the foundation for further study. This course will provide students a knowledge of both energy policy and how economists approach energy problems.

After completing this course, the student

1. will be able to analyze the exploration, extraction and drilling decisions of energy suppliers.
2. will be able to analytically evaluate the advantages and challenges about switching to renewable energy and sustainable energy sources.
3. will have a working knowledge of the determinants of energy demand.
4. will learn about energy efficiency and residential demand management programs.
5. will be able to critically analyze the domestic and international geographic and political issues about oil and other energy products.
6. will be able to statistically analyze the impact and implications of past and current energy policies.
7. will be able use and apply graduate level economic modelling of utility maximization, cost minimization, Lagrangian functions and derivation of energy demand functions.
8. will be able to perform statistical estimation with treatment effects, panel data and difference-in-difference models in the context of energy demand programs.

Required Text:

Daniel Yergin, The Quest (2012, Revised and Updated)

Optional Text:

Daniel Yergin, The Prize: The Epic Quest for Oil, Money, and Power (Free Press, 1992).

Subhes Bhattacharyya, Energy Economics, Springer

Michael T. Klare, Resource Wars (Henry Holt and Company, 2002).

Readings:

I will post the readings (lecture notes, papers, etc.) to the class website on Blackboard. I will announce the required readings in class.

Exams and Grading Policy:

Grading is not done on a curve in this class. Grades will be determined using the following scheme:

Assignments	Percentage
Midterm Exam #1	% 15 of total semester grade
Midterm Exam #2	% 15 of total semester grade
Final Exam	%35 of total semester grade
Homework Assignments	% 10 of total semester grade
Presentation	%25 of total semester grade

Your letter grade will be determined according to the following schedule:

Percentage	Grade
94% to 100%	A
90% to 93%	A-
87% to 89%	B+
83% to 86%	B
80% to 82%	B-
75% to 79%	C+
70% to 74%	C
65% to 69%	C-
60% to 64%	D+
55% to 59%	D
50% to 54%	D-
Below 50%	F

Exams:

There will be 2 midterm exams and a final exam.

The midterm exams will be 1 hour long and take place in class. There will be NO MAKE-UP TESTS given in the course unless reasonable and official excuse is provided. If you miss the test you will be assigned a grade of zero.

If an acceptable excuse is provided, the student will have the opportunity to take the make-up test offered at a reasonable time. However, any makeup must be agreed to by me prior to the test time.

The final exam for this class will be comprehensive (covers all material) and is required for all students.

Description of the Extra Graduate Hour

Wednesday 3.15 – 4.15 part of this course is open to graduate students only (interested undergrad students may attend this extra reading session if they like). This is an extra reading hour and we will discuss about the recent academic research on environmental and energy issues. I will post some most relevant and recent papers (including my own research) to Blackboard and we will discuss how to apply the theoretical and empirical parts of these studies. In other words, we will learn the techniques that are used in environmental economics literature in more detail. We will be using econometric software called Stata. The economics lab (UH 4150) is now a “virtual lab”. To connect to the virtual lab from anywhere go to <http://vlab.utoledo.edu> and follow the directions.

Homework Assignments

Assignments will allow students to assimilate knowledge from the various topics of the course and demonstrate that knowledge, as well as prepare for exams. Assignments will be due at the beginning of the class on their due date. Please turn in Homework Assignments in hard-copy form and not via email.

Presentation

One component of this class is a comprehensive presentation on a topic from Yergin’s book “The Quest”. The purpose of the presentation is to give you the chance to apply economic thinking to a specific, real-world energy problem. I suggest you to meet me before your presentation to determine the structure of your project.

- i) Students must read the whole book before choosing a topic.
- ii) Each student will select a topic from Yergin’s book.
 - Part 1: The New World of Oil (Chapters 1 to 5)
 - Part 1: The New World of Oil (Chapters 6 to 10)
 - Part 2: Securing the Supply
 - Part 3: The Electric Age
 - Part 4: Climate and Carbon
 - Part 5: New Energies
 - Part 6: Road to the Future
- iii) Each student will cover the chapters in each topic as outlined in the book. This means you will follow the direction in the book. However, you also will need to gather information from the library, published articles, journals and the internet and contribute to the original arguments in the book, using the economic theory from this class and your academic experience. You will need to demonstrate that you can think like an economist. For a perfect presentation, you need to use multiple published sources to provide an integrated, comprehensive presentation of your concept.
- iv) Students must prepare slides as a guideline of the presentation. Each student will present about 15-20 minutes of the team’s project. So the presentation of a team will take the whole class period (However, I am flexible on timing, I don’t want you to rush to finish your presentation).
- v) During presentations, I and other students will ask questions or demand further explanation if something is unclear. We will not have a separate Q&A session; anybody can stop you during your presentation and ask a question. You should know the meaning of the concepts in your presentation.

Attendance:

You are expected to attend all classes, but there is no formal attendance policy. This course builds on itself and if you miss a substantial portion of it, you may fall behind easily. If you miss a class meeting, you are expected to obtain notes and other material on your own. Students will be notified of class cancellations by class announcements and email if necessary.

Class participation:

Class participation is critical to the learning process, and so class attendance is necessary. Consequently, you are expected to come to class prepared to discuss the day's readings. If you experience any difficulties with the material at any point please clearly communicate these to me, so we can resolve them immediately. Please don't hesitate to ask questions in class, you can ask questions at any time during the lecture.

Group Work Policy

Working in groups while solving homework problems and preparing for the tests is greatly encouraged, but each student **MUST** submit his or her individual answer for homework assignments. Any academic dishonesty will result in an F grade for that particular assignment.

Academic Dishonesty:

Also known as "cheating," academic dishonesty will NOT be tolerated in this class. Cases of academic dishonesty will be prosecuted in accordance with the University regulations. Cheating in this course can result in an "F" in the course. In this course, academic dishonesty includes (but is not limited to) unapproved assistance on examinations, copying the homework of others, re-using coursework from other classes, plagiarism or other use of published materials without complete citations, or fabrication of referenced information. Every person is responsible for carefully monitoring their work so that sources are cited properly and academic integrity principles are preserved. See the University's "Policy Statement on Academic Dishonesty" in the current catalog.

Services for Students with Disabilities:

The University of Toledo has support services available for students with disabilities. Any student with a disability who seeks accommodations to complete the requirements of this course must register with the Office of Accessibility. Once registered, I will make all reasonable efforts for accommodations as required by law and University policy. For information, please contact the Office of Accessibility by email, OfficeofAccessibility@utoledo.edu, or phone, 419-530-4981 or 419-530-2612.

Disclaimer:

Changes in exam dates, scheduled lecture topics, and other assignments may occur and will be announced in class or by email.

Course Schedule:

This is a tentative schedule, and may be subject to change.

Energy Economics

Introduction

Syllabus, Introduction

What is Energy Economics?

Energy Outlook

Energy at the center of the Environment and the Economy

Supply Side of the Energy Markets

Natural Resources and Ecosystem Services

Depletable Resource Allocation: Time Horizons, Substitutes, and Extraction Cost

Energy: The Transition from Depletable to Renewable Resources

Demand Side of the Energy Markets

Demand Side Management and Energy Efficiency

Economic Foundations of Energy Demand

Estimating Energy Demand Equations

Behavioral Underpinnings of energy conservation

Energy and Climate Change

The Basics of Climate Change

Climate Change as a risk: Mitigation and Adaptation

The Challenge of International Coordination

The Political Economy of Energy

Short history of oil and politics in the US

The New World of Oil: New Oil fields

Securing the Supply: Is the world running out of oil?

The Electric Age: Fuel Choice

Climate and Carbon

New Energies: Rebirth of Renewables

Road to the Future

Energy Policy and the Environment

Government Intervention

Subsidies and Taxes

Globalization

Job creation vs Environmental Impacts

Final Exam