West Virginia University

Course Syllabus
ARE 187: Energy Resource Economics
Fall 2012

Instructors Information

Instructor	J. Wesley Burnett, PhD
Office Location	Agricultural Sciences Building, Room 2044
Office hours	TBA
Phone	304-293-5639
Email	wesley.burnett@mail.wvu.edu

Schedule

Course Number	ARE 187
Course Location	AGS 2001
Day	Tuesday and Thursday
Class Times	11:00 a.m. to 12:15 p.m.

Prerequisites

None

Course Overview

The production and consumption of energy are extremely important for all sectors of the US and World economies. Energy is a vital component for economic development and essential for maintaining the lifestyles that we have grown accustom. Consumption and production related activities associated with fossil fuels also account for a high percentage of pollution remediation spending and environmental problems in the United States. This figure undoubtedly will increase if further access is granted to development of national park reserves and if global climate changes are addressed.

As readily accessible reserves are depleted energy production will become more difficult and expensive since we rely heavily upon depletable resources such as coal, oil and natural gas and little effort have been made to develop renewable resources such as solar, wind geothermal and hydroelectric power. Further, much of our oil and gas are imported from foreign countries, who may or may not share our ideal of open markets and beliefs.

Our high standard of living has been made possible largely through the availability of inexpensive energy. The cost of energy affects our choices of economic activities, transportation, and lifestyle. On a global scale, international politics and national economics are heavily influenced by the price of energy sources such as oil and natural gas.

Energy is clearly important to all individuals and society; however the general public often lacks the knowledge about many of the basic forces associated with this industry. Few completely

understand the available choices of energy and the consequences associated with these choices. It is imperative to develop an understanding of the choice because of their effects on our present and future lifestyles.

Course Goals

Upon completion of the course, students should be able to:

- Understand the basic technical aspects underlying the major energy sources
- Understand the technologies that convert the energy sources into power
- Understand the economic concepts of demand and supply for various energy sources
- Understand the relationship between energy consumption and environmental pollution.

Course Description

This is an introductory course for individuals interested in fossil fuel and renewable sources of energy, the underlying economics of the energy market, the effects of energy production and consumption on the environment, and the relationships among energy and politics. This course will address the choices available in the supply and demand of energy using simple economic theory.

Attendance Policy

Attendance is critical since a portion of your grade will be based on the student being present. Attendance will be taken.

Grade Determination

	Percentage	**Tentative Due Date**
Attendance……	10%…….	
Homework 1……..	10% …….	Sept 28th 2012
Homework 2……	10%…….	October 5th 2012
Mid Term Exam……	35%…….	November 30th 2012
Final Paper/Project…..……	35%…….	Final's Week

*A field trip may be taken and guest speakers will be invited to the class.

Exams and Grading

Your letter grade will be assigned according to the following scale:

Percentage of Final Points	Course Grade
90% - 100 %	A
80% - 89%	B
70% - 79%	C
60% - 70%	D
60% or less	F

Textbook and other Readings

The main textbook for this course is: **Hinrichs, R. A., and Kleinbach, M. (2005). *Energy*: Its Use and the Environment, Fourth Edition. Harcourt College Publishing: New York.**

The course lectures would be supplemented with presentations and notes with topic discussed in the class. Regular attendance of will make it easier for you to understand the course.

POLICY STATEMENTS

Social Justice Statement

"West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veterans status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Services (293-6700)."

Academic Integrity

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at:**http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code.** Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

Tentative Course Outline and Reading Assignments[1]

Date	Topic	Readings	Trips/Speakers
8/21	Introduction		
8/23	Introduction to Energy Economics	Chapter 1	
8/28	Technical Background	Chapter 2 – 3	
8/30	Technical Background	Chapter 4 – 5	
9/4	Fossil Fuels and Demand	Chapter 7	
9/6	Fossil Fuels and Demand	Chapter 7	Doug Patchen
9/11	Fossil Fuels and Demand	Articles	
9/14	Fossil Fuels and Demand	Articles	
9/18	Fossil Fuels and Demand	Articles	
9/20	Introduction to Electricity	Chapter 10	
9/25	Generation of Electricity	Chapter 11	
9/27	Field Trip	Elect. Station in Morgantown	Field Trip
10/2	Electricity Markets	Articles	
10/4	Electricity Markets	Articles	Stratford Douglas
10/9	Mid Term Exam		
10/11	Electricity from Renewables	Chapter 12	
10/16	Electricity from Renewables	Chapter 12	
10/18	Biomass	Chapter 17	
10/23	Biomass and Geothermal	Chapter 17 – 18	
10/25	Introduction to Nuclear	Chapter 13	
10/30	Nuclear Power	Chapter 14	
11/1	Energy Conservation	Chapter 5	Clement Solomon
11/6* election day	Air Pollution and Energy	Chapter 8	
11/8	Air Pollution and Energy	Chapter 8	
11/13	Global Climate Change	Chapter 9	
11/15	Global Climate Change	Chapter 9	
11/20	Thanksgiving recess		
11/22	Thanksgiving recess		
11/27	Future Energy Alternatives	Chapter 16	
11/29	Paper Presentations		
12/4 exam week	Final exam review		
12/6 exam week	Final Exam		
	Final exam		

[1] Please note that the schedule is subject to change.

Part I. Economic Principles and Tools (weeks: 1-8)

1. **Introduction to Environmental and Resource Economics**
   Environmental and Natural Resource Economics, Chapter 1.
2. **Natural Resources and the Economy**
   Natural Resource Economics, Chapter 2.
3. **Supply, Demand and Market Efficiency**
   Natural Resource Economics, Chapters 5 & 6.
4. **Property Rights and Externalities**
   Environmental and Natural Resource Economics, Chapter 2
5. **Benefit-Cost Analysis**
   Environmental and Natural Resource Economics, Chapter 3
6. **Valuing the Environment: Methods**
   Environmental and Natural Resource Economics, Chapter 4.

MIDTERM EXAM

Part II. Environmental and Natural Resources Use (weeks: 9-16)

7. **Energy: The Transition from Depletable to Renewable Resources**
   Environmental and Natural Resource Economics, Chapter 7.
8. **Recyclable Resources: Minerals, Paper, Bottles and E-Waste**
   Environmental and Natural Resource Economics, Chapter 8.
9. **A Locationally Fixed, Multipurpose Resource Land**
   Environmental and Natural Resource Economics, Chapter 10.
10. **Renewable Resources: Forests**
    Environmental and Natural Resource Economics, Chapter 12.
11. **Economics of Pollution Control: An Overview**
    Environmental and Natural Resource Economics, Chapters 14 & 15.
12. **Climate Change**
    Environmental and Natural Resource Economics, Chapters 16.

FINAL EXAM