

Course Syllabus  
**Recent Developments in the Coal Industry**  
3 Credits: RESM 693/493 (CRN 87283/87282)  
Rm. 2055, Ag. Sci. Bldg.  
Fall 2007 – Thursday 2:00 - 4:15pm

Instructor:

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Office Hours: 10-12 noon MTWF or by appointment.

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Course Description:

This 3 credit hour course is suitable for both graduate and upper division undergraduate students interested in the coal and energy sector. This course provides an overview of the world's coal industry including structure, organization, markets, utilization, production, and interrelationships with the rest of the economy. Lectures introduce students to coal resource management, production, transportation, and utilization; environmental issues related to coal utilization; and sustainable development issues related to the coal sector. Focusing on the US and China, the course topics include an introduction to international coal markets, clean coal technology, coal conversion developments, environmental consequences, and carbon management programs. Through field trips to coal mines and utilization facilities and presentations by guest speakers, the course will give students a better understanding of the coal industry as well as relevant economic and environmental issues in coal regions. While there is an emphasis on West Virginia, the course provides an overview of the coal sector relevant to all of the primary coal producing areas. Case studies include basic skills of how to plan energy projects and undertake feasibility studies.

Upon successful completion of the course, students will have an overall understanding of the coal sector, management of coal resources, coal business development, industrial project planning, environmental protection, regional economic development, and current global energy and environmental issues relevant to the future of the coal sector.

Course Objectives:

The objective of the course is to introduce students to the practical aspects of the coal industry and the primary environmental and economic issues. The instructor will provide detailed instruction and training on coal resource management, coal business development, industrial project planning, environmental protection, and regional economic development. A case study will focus on development of the proposed coal-to-liquid project in southern West Virginia. The instructor will discuss growing needs for specialized technology and project development skills to meet the emerging demand from the coal conversion sector.

Expected Learning Outcomes:

Upon completion of this course the student will be able to:

- Understand energy issues and important industries relevant to coal
- Identify coal resource and discuss natural resource utilization relevant to mining
- Identify and discuss important factors related to coal markets, production, transportation, and utilization

- Understand the primary relationships that tie the coal sector to broader energy, environmental, and economic factors
- Identify and discuss important issues in energy consumption, global environment, and economic development
- Identify and discuss the major coal producing and consuming areas of the world
- Identify the steps of and master the basic skills for developing a feasibility study for a proposed coal project
- Understand the potential importance of coal gasification and liquefaction to the West Virginia economy
- Learn to propose and plan an integrated coal project in a coal production areas (e.g., mining, or coal conversion) including environmental protection and sustainable economic development aspects

### Learning Tools:

There is no text. Weekly reading assignments from World Coal Institute publications supplement the lecture material. Power points and handouts are used as needed. References and web links presented in class refer those students interested in further exploration of the subject to additional sources of information.

Supplementary books are on reserve in WVU Evansdale Library, and they are: 1) [*Alternative Fuels* ] by Sunggyu Lee, 2) [*Environmental impacts of coal mining and utilization*] by the Beijer Institute, and 3) [*Energy and the environment*] by James A. Fay, Dan S. Golomb.

Field trips include: 1) a surface coal mine; and 2) a coal utilization facility

Case studies are: 1) Shenhua coal-to-liquids (CTL) projects; and 2) a coal-to-liquids project in Mingo County, West Virginia

Participation in class and field trips is strongly recommended.

The WVU MIX e-mail system will be used to facilitate communication, including learning materials if needed, with individual students or the group as appropriate.

### Grading:

Assignments:	30% (3 assignments)
Midterm exam	20%
Final project report and presentation	50%

Regular, punctual attendance is expected. The exam will include a combination of short answer, multiple choice, and true/false questions. Homework assignments are mandatory and will be discounted 20% if handed in after the due date. Homework is graded as follows: following instructions (30%); application of knowledge (40%); style, grammar, and spelling (10%); and timeliness (20%).

The final project report is a portion of a pre-feasibility study of a coal-to-liquids project. The final report will be developed by individual class members. Each chapter and presentation will be graded based on structure and content (60% + 40%).

Reading assignments are not graded but will be covered on the tests and are expected to be reviewed before the topic is addressed in class.

## PLANNED COURSE OUTLINE

Week	Date	Contents
1	8-23-07	Introduction of coal, coal industry, and use of coal
2	8-30-07	<b>Guest Speaker:</b> Shenhua CTL Project Development
3	9-6-07	Coal reserves, production, and demand
4	9-13-07	<b>Field Trip I:</b> Surface coal mine
5	9-20-07	Coal industry and problems in WV, USA, World
6	9-27-07	Coal market and international trade; Cost of coal and coal utilization
7	10-4-07	Coal utilization industry and clean coal technology
8	10-11-07	<b>Midterm test</b>
9	10-18-07	Coking and gasification technologies
10	10-25-07	Coal conversion and coal to liquid development
11	11-1-07	<b>Guest Speaker:</b> Carbon management and environment protection
12	11-8-07	The management of resources and by products associated mining (final project assignment)
13	11-15-07	Coal and coal conversion project planning
14	11-22-07	Feasibility study of integrated coal mining and utilization project
15	11-29-07	<b>Field Trip II:</b> Coal utilization facility: power plant
16	12-6-07	Case studies: Shenhua CTL plant and coal to liquid project in Mingo County, WV
17	12-13-07	<b>Final project presentations</b>

**Attendance policy:** Attendance is strongly recommended for lectures and field trips. Excused absences for any reason are at the discretion of the instructor.

**Social Justice Statement:** WVU 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 nondiscrimination. WVU does not discriminate on the basis of race, sex, age, disability, veteran 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 arrangement with Disability Services (293-6700).