

COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED SCIENCES		
DEPARTMENT	ENVIRONMENTAL ENGINEERING		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	GE5310	SEMESTER OF STUDY	3 rd
COURSE TITLE	ENERGY SOURCES		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
LECTURES, LAB EXERCISES, CASE STUDIES		5	6
COURSE UNIT TYPE	SC		
PREREQUISITES :	NONE		
LANGUAGE OF INSTRUCTION/EXAMS:	GREEK		
COURSE DELIVERED TO ERASMUS STUDENTS	YES		
MODULE WEB PAGE (URL)	http://geope.teikoz.gr/undergraduate/ug_studies.htm		

2. LEARNING OUTCOMES

Learning Outcomes
<p>This course is providing the necessary scientific background to the undergraduate students in the thematic areas of fossil fuels and renewable resources; the genesis of coal and hydrocarbon deposits, the nuclear energy production the exploration and the exploitation of the fossil fuels, the Greek, European and global energy resources, the environmental implications related to the energy sources. Emphasis is given on the Greek lignites and the energy issues related to Greece.</p>
General Skills
<p><i>Upon successful completion of the programme students will:</i></p> <ul style="list-style-type: none"> -have the basic theoretical and practical knowledge in the fields of the subject area of Geotechnology and Environmental Engineering -be able to properly apply the theoretical and practical knowledge acquired during the study period -be able to cover a wide spectrum of scientific and technical knowledge related to mining and geotechnical projects as well as the sector of environmental reclamation -have gained the necessary competencies to proceed to their second cycle study.
<ul style="list-style-type: none"> • Locate, select, organize and document information using appropriate technology and information sources • Independent work • Teamwork • Apply new research ideas • Respect the natural environment

- Promotion of free, creative and inductive thinking

3. COURSE CONTENTS

1. Fossil fuels (coal-oil-natural gas)
2. Peat-Lignite-Bituminous coal-anthracite
3. Bituminous shales and sandstones
4. Radioactive energy sources (nuclear energy)
5. Genesis of solid fuels, oils and natural gas
6. Basic components-exploration of deposits-mining-utilization
7. Global reserves
8. Energy balance
9. Environmental impacts
10. Clean coal technologies
11. Global environmental problems related to energy utilization
12. Renewable energy sources (solar-hydroelectrical-geothermal-wind-biomass-biodiesel and bioethanol-tides and waves-nuclear fission)

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	Lectures in classroom	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Utilization of e-class platform	
TEACHING METHODS	<i>Method description</i>	<i>Semester Workload</i>
	Lectures	40
	<i>Self-study activity</i>	20
	<i>Group project</i>	30
	<i>Lab exercises</i>	40
	Total	130
ASSESSMENT METHODS	<ol style="list-style-type: none"> 1. In-class individual assignment and multiple choice test (60%) 2. Group assignment (40%) 	

5. RESOURCES

1. Balaras, K, Argyriou, A, Karayiannis, F (2006). Conventional and renewable energy sources. (in Greek)
2. Gindens, A. (2010). The policy of climatic changes. (in Greek)

SC: Specialization Courses