

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	APPLIED SCIENCES		
<b>DEPARTMENT</b>	ENVIRONMENTAL ENGINEERING		
<b>LEVEL OF STUDY</b>	Undergraduate		
<b>COURSE UNIT CODE</b>	<b>GE5540</b>	<b>SEMESTER OF STUDY</b>	5 <sup>o</sup>
<b>COURSE TITLE</b>	PROCESSING OF PRIMARY & SECONDARY MATERIALS		
<b>COURSEWORK BREAKDOWN</b>		<b>TEACHING WEEKLY HOURS</b>	<b>ECTS Credits</b>
Lectures, Laboratory Exercises		6	6.0
<b>COURSE UNIT TYPE</b>	SC		
<b>PREREQUISITES :</b>	Non		
<b>LANGUAGE OF INSTRUCTION/EXAMS:</b>	Greek/English		
<b>COURSE DELIVERED TO ERASMUS STUDENTS</b>	YES		
<b>MODULE WEB PAGE (URL)</b>	<a href="http://geope.teikoz.gr/undergraduate/ug_studies.htm">http://geope.teikoz.gr/undergraduate/ug_studies.htm</a>		

### 2. LEARNING OUTCOMES

<b>Learning Outcomes</b>
<p>The course of Processing of Primary and Secondary Materials is separated in two disciplines: Mineral Processing and the processing of solid waste - Recycling. Aim of mineral processing is the synoptic and simple study of the basic principles of the classical processing, like cutting, crushing, classification, screening und different methods of separation according their specific properties. The aim of Processing of solid waste and Recycling is the application of the methods of classical mineral processing and their adaption on special kinds of materials, as the solid wastes are.</p> <p>On successful completion of this module the learner will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand and represent clearly, to subscribe and analyze the basics and fundamentals of the science of mineral processing and solid waste treatment, in order to use and apply them in the range of geotechnical, technical and environmental sciences.</li> <li>2. Design and create methods to process and treat different minerals and solid wastes.</li> <li>3. Redact financial and technical reports and processing methods of primary and secondary material.</li> <li>4. Propose different methods of Recycling..</li> </ol>
<b>General Skills</b>
<p><i>Upon successful completion of the programme students will:</i></p> <ul style="list-style-type: none"> <li>-have the basic theoretical and practical knowledge in the fields of the subject area of Geotechnology and Environmental Engineering</li> <li>-be able to properly apply the theoretical and practical knowledge acquired during the study period</li> </ul>

-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.

### 3. COURSE CONTENTS

- Characterization and definition of solid wastes and minerals.
- Mechanical treatment of solid waste (crushing, classification, hand sorting, optical sorting, heavy media sorting, magnetically sorting, electro statically sorting, morphological sorting, pelleting, drying, transportation, feeding ect.)
- Recycling of paper, plastics, glass, ferrous metals, aluminum, electric – electronic devices, batteries, lightweight packaging, biological waste ect.).
- Composting.
- Incineration of solid waste.
- Financial and technical analysis of processing facilities.

### 4. TEACHING METHODS - ASSESSMENT

<b>MODE OF DELIVERY</b>	Face-to-face	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b>		
<b>TEACHING METHODS</b>	<i>Method description</i>	<i>Semester Workload</i>
	Theory	90
	Laboratory Exercises	70
	Field trips	10
	Personal Learning	10
	<b>Total of lesson</b>	<b>180</b>
<b>ASSESSMENT METHODS</b>	<ol style="list-style-type: none"> <li>1. Final Examination 50%</li> <li>2. Laboratory Examination 50%</li> </ol>	

### 5. RESOURCES

- Recommended Book Resources:

- Recommended Article/Paper Resources:

- Σεραφείμ Γ. Σαββίδης: Εμπλουτισμός Στερεών Αποβλήτων – Τεχνολογίες Ανακύκλωσης. Κοζάνη 2007. Αυτοέκδοση.
- Φραγκίσκος, Α., Κατράκης, Σ.: Εισαγωγή στον Εμπλουτισμό των Μεταλλευμάτων και βιομηχανικών ορυκτών. Τ.Ε.Ε. 1979.
- Schubert, H.: Aufbereitung fester mineralischer Rohstoffe. Band I-IV, 4. Auflage:

Leipzig. Deutscher Verlag für Grundstoffindustrie. 1989.

- Schubert, H.: Handbuch der mechanischen Verfahrenstechnik. Wiley-VCH.

SC: Specialization Courses