

COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED SCIENCES		
DEPARTMENT	ENVIROMENTAL ENGINEERING (ENVIROMENTAL GEOTECHNOLOGY ENGINEERING)		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	GE5250	SEMESTER OF STUDY	2 nd
COURSE TITLE	Materials Technology		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
Lectures και Laboratory work		3 Lect.+2Lab.	4,5
COURSE UNIT TYPE	GBC		
PREREQUISITES :	Non		
LANGUAGE OF INSTRUCTION/EXAMS:	Greek/English		
COURSE DELIVERED TO ERASMUS STUDENTS	YES		
MODULE WEB PAGE (URL)	http://geope.teikoz.gr/undergraduate/ug_studies.htm		

2. LEARNING OUTCOMES

Learning Outcomes
<p>On successful completion of this module the learner will be able to:</p> <ol style="list-style-type: none"> 1. Comprehend the relationship between structure and properties of the materials. This provides the basis for both the possibility of selection of existing materials and development of new materials 2. Know basic elements concerning the structure, properties and applications of materials 3. Comprehend the treatments of materials and their relationship with properties 4. Estimate the quality of materials
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"> • Retrieve, analyse and synthesise data and information, with the use of necessary technologies • Work autonomously • Work in teams

- Work in an interscientific context
- Respect natural environment

3. COURSE CONTENTS

THEORY

- Structure of materials
- Solidification, structure imperfections, diffusion in solids
- Properties of materials (mechanical, electrical, magnetic, optical, thermal etc)
- Phase diagrams and phase transformations
- Thermal treatments of metallic materials
- Engineering metals & alloys: Steels, Cast Irons, Copper, Aluminum, Magnesium, Zinc, Titanium etc and their alloys
- Polymers: Thermoplastic and Thermosetting polymers, Elastomers (structure, properties and applications)
- Ceramic materials, Glasses (structure, properties and applications)
- Composite Materials
- Forming techniques for materials

LAB

- Structure examination of materials
- Estimation of the properties and quality of materials

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	Face-to-face	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Power point presentations and self-assessment test in the Blackboard. Student contact electronically.	
TEACHING METHODS	<i>Method description</i>	<i>Semester Workload</i>
	Lectures	37
	Laboratory work	23
	Report writing	23
	Autonomous study	30
	Total contact hours and training	<i>113</i>
ASSESSMENT METHODS	<p><i>Theory</i></p> <ol style="list-style-type: none"> 1. Written intermediate Examination (40%) 2. Final written Examination (60%) including: Short answer questions, extended answer questions , exercises solution <p><i>Lab</i></p> <ol style="list-style-type: none"> 1. Oral Examination on each lab exercise, Written reports for laboratory exercise (60%) <p>Final Examination (40%)</p>	

5. RESOURCES

- Recommended Book Resources:

- Επιστήμη και τεχνολογία υλικών, 2η έκδοση, Βατάλης Αργύρης, Εκδόσεις ΖΗΤΗ, 2009
- Εργαστηριακές Ασκήσεις Τεχνολογίας Υλικών, Τσικριτζής Λ., Τσικριτζής Λ. 2009\
- Τεχνολογία υλικών, Καλκάνης- Χατήρης, Εκδ. Στέλλα Παρίκου & ΣΙΑ,1998
- Charles A. Happer, Handbook of Materials for Product Design, McGraw-Hill, New York, 3th ed.,

- Recommended Article/Paper Resources:

GBC: General Background Courses