COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED SCIENCES		
DEPARTMENT	ENVIRONMENTAL ENGINEERING		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	**GE5660**	**SEMESTER OF STUDY**	6
COURSE TITLE	REMOTE SENSING – GEOGRAPHICAL INFORMATION SYSTEMS		

COURSEWORK BREAKDOWN	**TEACHING WEEKLY HOURS**	**ECTS Credits**
THEORY	3	2.5
LABORATORY EXERCISES	3	2.5
	6	**5**

COURSE UNIT TYPE	SC: Specialization Courses
PREREQUISITES :	N/A
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

The course aims to enable students to:

- Apply Remote Sensing for acquiring thematical information for the environment.
- Apply remote sensing imagery analytical methods for the extraction of information related to the environment.
- Apply remote sensing techniques to environmental sciences.
- Learn the structure of digital spatial data.
- Learn the principles of input, management, processing, analysis and visualization of data using geographical information systems.
- Apply remote sensing and GIS software packages available on the market in a number of problems.

General Skills

Upon successful completion of the programme students will:

- 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

- Search, analysis and synthesis of data and information, using the necessary technologies

- Design and management of projects
- Autonomous working
- Team work
- Generation of new research ideas
- Working in a multidisciplinary scientific environment

3. COURSE CONTENTS

History and general principles of remote sensing, EM radiation and general remote sensing systems, photography systems, photointerpretation, photogrammetry, remote sensing platforms, digital image analysis, radiometric errors, geometric distortions, atmospheric correction, image correction, classification, remote sensing applications, remote sensing software. Geographical information, data models, axioms, geographical information and computers, data entry, processing and storing, spatial analysis, interpolation, digital elevation models, modern problems and trends in GIS, GIS applications, GIS in Greece, GIS software.

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	Face to face
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Extensive use of computers, sophisticated geostatistical software, data projection system, internet.
TEACHING METHODS	

Method description	***Semester Workload***
Laboratory computer exercises using MapInfo and Raster Design	14 exercises X 3 hours per week = 42 hours
Study of the software user manual	14 exercises X 1 hours per week = 14 hours
Theoretical lectures	14 exercises X 3 hours per week = 42 hours
Study of theory	14 exercises X 1 hours per week = 14 hours
Final theoretical examination study	4 hours
Total	***116***

ASSESSMENT METHODS	Student assessment is carried out in Greek. Students watch through a projection screen and at the same time perform on their computer the steps of each laboratory exercise in the course laboratory. Their assessment includes examining the completion of a selected exercise steps as well as verbal examination on questions related to the exercise. The successful completion of the steps receives at most 5 marks and so does the verbal examination. Thus, the total top marks for the final lab exam is 10. Assessment in the theoretical part is based on a final written examination with 2 questions and three exercises. The assessment method for both laboratory and theoretical parts is made known to the students at the beginning of the

	semester. Additionally, for the theoretical part the students are provided with examples of past exam papers.

5. RESOURCES

- Recommended Book Resources:

- *Kapageridis, I., Introduction to Remote Sensing and GIS, Theory and Lab Notes, 2011.*
- *Burrough, P.A., and McDonell, R.A. Principles of Geographical Information Systems, Spatial Information Systems and Geostatistics, Oxford University Press, 1998*
- *Gupta, R.P. Remote Sensing Geology, 2nd Edition, Springer-Verlag, 2003*
- *Lillesand, T.M., and Kiefer, R.W., Remote Sensing and Image Interpretation, Wiley, 1994*
- *Linder, W. Digital Photogrammetry - A Practical Course, 2nd Edition, Springer-Verlag, 2006*
- *Mertikas, S.P., Remote Sensing and Digital Image Analysis, ION Publications, 1999*

- Recommended Article/Paper Resources:

- Remote Sensing of Environment
- International Journal of Remote Sensing
- GeoInformatica
- Journal of Geographical Systems
- Computers & Geosciences
- Mathematical Geosciences