COURSE DISCRIPTION

1. GENERAL

SCHOOL	ENVIRONMENT, GEOGRAPHY AND APPLIED ECONOMICS		
DEPARTMENT	GEOGRAPHY		
LEVEL OF COURSE	UNDERGRADUATE		
COURSE CODE	ΓΕ3010	**SEMESTER**	6^{th}, 8^{th}
COURSE TITLE	QUATERNARY GEOLOGY		

STRUCTURE OF TEACHING ACTIVITIES	**TEACHING HOURS PER WEEK**	**NUMBER OF CREDITS ALLOCATED (ECTS)**
Lectures and Laboratory Classes	3	5

TYPE OF COURSE	Optional
PREREQUISITES	-
LANGUAGE OF INSTRUCTION	GREEK
COURSE OFFERED TO ERASMUS STUDENTS	YES (in English if required)
(URL)	https://eclass.hua.gr/courses/GEO208/

2. EXPECTED LEARNING OUTCOMES

Learning outcomes

Describe the objectives of the course as well as the expected learning outcomes

The course "Quaternary Geology" aims to help the students to understand the basic characteristics and depositional environments of the Quaternary formations. An additional objective is to understand the climate and geodynamic processes that took place during the Quaternary period at the global, European and local levels.

In this course the student:

- learns to recognize, describe and classify clastic sediments from different deposition environments,
- develops skills for preparation of sediment samples for granulometric and micropaleontological analysis,
- becomes familiar with sampling sediments for OSL dating.

3. COURSE CONTENTS

Classroom Lectures:

The course is structured in three sections:

1. Introduction of the students to the scientific field of Quaternary Geology and analysis

of sedimentary-stratigraphic characteristics of Quaternary formations. Particular emphasis is placed on the terrestrial sedimentation environments of the formations and their distribution in the Greek area. A brief reference to dating methods, with particular emphasis on the dating methods of radiocarbon and optically stimulated luminescence (OSL).
2. Analysis of the causes of long-term climate change on Earth and a description of the glacial-interglacial cycles during the Quaternary period. Analysis of changes in sea-level during glacial and interglacial periods. Description of the recent tectonic processes, seismicity and volcanism of the Greek territory during the Quaternary.
3. Evolution of the Hominids during the Pleistocene and the Holocene, and their interaction with physio-geographical and climatic changes.

Laboratory Class:
Recognition, description and classification of clastic sediments from different depositional environments (river-bed deposits, fluvial terraces, flood plains, river deltas and coastal deposits). Preparation of samples for granulometric and micropaleontological analysis, as well as sampling of sediments for OSL dating. Specifically:

1. Opening of drilling cores included in plastic pipes. Microscopic examination of sediments from boreholes drilled in different depositional environments, construction (description) of sedimentary characteristics of each core log.
2. Sediments sampling for natural moisture measurement, particle size analysis, paleontological analysis and dating.
3. Measurement of the physical moisture of the samples (weighing, drying and recording of the results).
4. Grain size analysis of sieving sediments with mean grain size > 2mm and granulometric analysis using the Laser Scan (Laser Mastersizer 3000 of Malvern) of very high resolution for the fraction <2mm. Construction and study of particle size distributions diagrams, processing and evaluation of grain size statistical parameters and classification of sediments using triangular diagrams.
5. Preparation of samples for laboratory micropaleontological analysis and observation of the processed samples in a stereoscopic microscope for identifications.
6. Physical and chemical processing of samples to make them suitable for OSL dating.

4. TEACHING AND ASSESSMENT METHODS

<table>
<tr><td>TYPE OF LECTURES</td><td>• In class lectures
• Laboratory Lectures and Practice</td></tr>
<tr><td>ICT USE</td><td>ICT use, Internet use and eclass</td></tr>
<tr><td>TEACHING STRUCTURE</td><td>
<table>
<tr><th>Activity</th><th>Hours per semester</th></tr>
<tr><td>Lectures</td><td>13</td></tr>
<tr><td>Laboratory</td><td>24</td></tr>
<tr><td>Field-work</td><td>15</td></tr>
<tr><td>Weekly assignments</td><td>30</td></tr>
<tr><td>Studying – personal work</td><td>45</td></tr>
<tr><td>TOTAL</td><td>127</td></tr>
</table>
</td></tr>
<tr><td>ASSESSMENT METHODS</td><td>Assessment Language: Greek</td></tr>
</table>

	Assessment Methods Written examination at the end of the semester (3 hours multiple choice test) providing the 70% of the final grade. Evaluation of the weekly submitted laboratory exercises provides the 30% of the final grade. The evaluation criteria are announced at the beginning of the semester.

5. RECOMMENDED READING

Books

Karkanas, P., 2010. Introduction to Geoarchaeology. Nefeli publishing.
Brandley, R.S., 1999. Paleoclimatology: reconstructing climates of the quaternary. Academic Press.
Siegert, M.J., 2001. Ice sheets and Late Quaternary environmental change. Wiley & Sons.
Walker, M., 2005. Quaternary dating methods. Wiley & Sons.

Journals

Mediterranean Archaeology and Archaeometry, Πανεπιστήμιο Αιγαίου.
Palaeogeography-Palaeoclimatology-Palaeoecology, Elsevier.
Geoarchaeology, Wiley.