COURSE DISCRIPTION

1. GENERAL

SCHOOL	ENVIRONMENT, GEOGRAPHY AND APPLIED ECONOMICS		
DEPARTMENT	GEOGRAPHY		
LEVEL OF COURSE	Undergraduate		
COURSE CODE	ΓΕ 1320	**SEMESTER**	7th
COURSE TITLE	FLUVIAL GEOMORPHOLOGY		

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/GEO189/

2. EXPECTED LEARNING OUTCOMES

Learning outcomes

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

The course "Fluvial Geomorphology" is an introduction to basic concepts concerning drainage networks and drainage basins. It deals with the fluvial processes relative to the flowing water and the results of those processes which are the fluvial landforms.

The main aim of the course is to understand the basic processes such as a) the erosion by the action of surface water, b) transport of eroded material through river beds and c) deposition in areas of reduced flow capacity.

In this course the student:

- understands the features and mechanisms of the formation of fluvial landforms (river channels, knickpoints, fluvial terraces, flood plains, alluvial fans),
- develops skills related to the methodologies for geomorphological mapping of fluvial environments,
- learns quantitative analysis of drainage networks and to estimate incision rates in tectonically active areas,
- becomes familiar with the identification of fluvial landforms in the field.

3. COURSE CONTENTS

Classroom Lectures:
1. Fluvial processes - flow types: action of raindrops, non-concentrated surface flow, non-concentrated Horton flow, unconcentrated surface flow due to saturation, sporadically rill flow, underground flow subsurface flow. Channel flow types (turbulent flow, laminar flow, Reynolds number, plunging flow).
2. Longitudinal river profiles, base level (absolute - local).
3. Stages of development of the fluvial relief (youth, maturity, old, and rejuvenation).
4. Fluvial erosion: river energy, downcutting, lateral erosion, headward erosion.
5. Fluvial transport: sediment load, transport of sediment (dissolved load, suspended sediment, bed load.
6. Alluvial deposition: channel deposits, deposits of the banks of the bed, over-bank deposits, deposits of the margins of a valley.
7. Fluvial landforms: erosional landforms (types of stream channels - linear - meandering - braided), valley types (V-shaped, U-shaped, wind gaps, river piracy). Knickpoints. Depositional landforms: flood plains, fluvial terraces (rocky - alluvial, terraces, alluvial terraces dating techniques), alluvial fans.
Laboratory Class:
1. Strahler's stream ordering system, catchment delineation, Drainage networks analysis according to HORTON laws, estimation of drainage texture parameters (frequency-density).
2. Estimation of downcutting mean rates along the main channels of streams in the Northern Peloponnese for the period of the Upper Quaternary.

4. TEACHING AND ASSESSMENT METHODS

TYPE OF LECTURES	• In class lectures • Laboratory Lectures and Practice • Teaching in the field (Field trip)
ICT USE	ICT use, Internet use and eclass
TEACHING STRUCTURE	

Activity	*Hours per semester*
Lectures	24
Laboratory	12
Field work	10
Weekly assignments	30
Studying – personal work	51
TOTAL	***127***

ASSESSMENT METHODS	Assessment Language: Greek Assessment Methods The final rate of the course is computed by two parts as follows: The basic assessment type of the course is the written examination at the end of the semester (3 hours) providing the 70% of the final grade. Evaluation of the weekly submitted laboratory exercises (30%). The evaluation criteria are announced at the beginning of the semester.

5. RECOMMENDED READING

Valkanou, K., Karymbalis, E., Papanastassiou, D., Soldati, M., Chalkias, C., Gaki-Papanastassiou, K. (2015). The influence of tectonics on the drainage network of the North Evia Isl. (Sterea Hellas). Journal Geographies, 26: 8-20. (in Greek)

Charlton, R. (2008). Fundamentals of fluvial Geomorphology. Taylor and Francis Group, UK, 234p.

Goudie, A., Panizza, M. (2014). Encyclopedia of Geomorphology. Routledge, 1156 p.

Karymbalis, E., Papanastassiou, D., Gaki-Papanastassiou, K., Ferentinou, M., Chalkias, C. (2016). Late Quaternary rates of stream incision in Northeast Peloponnese, Greece. Frontiers of Earth Sciences, 10 (3): 455-478.

Karymbalis, E., Ferentinou, M., Giles, P. (2017) (on line first) Use of morphometric variables and self-organizing maps to identify clusters of alluvial fans and catchments in the north Peloponnese, Greece. In: D. Ventra and L. E. Clarke (eds) Geology and Geomorphology of Alluvial and Fluvial Fans: Terrestrial and Planetary Perspectives, *Geological Society, London, Special Publications*, 440.