

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF ENVIRONMENT, GEOGRAPHY AND APPLIED ECONOMICS		
DEPARTMENT	GEOGRAPHY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE		SEMESTER	2
COURSE TITLE	APPLIED GEOINFORMATICS IN ENVIRONMENTAL MANAGEMENT		
INDEPENDENT TEACHING ACTIVITIES <i>If ECTS credits are awarded to distinct parts of the course, e.g. lectures, laboratory exercises, etc., indicate the weekly teaching hours and the total number of ECTS credits.</i>		WEEKLY TEACHING HOURS	ECTS CREDITS
Lectures & Laboratory Exercises		3	5
<i>Add rows if needed. The teaching organisation and teaching methods used are described in detail in section (4).</i>			
COURSE TYPE <i>general background, special background, specialisation, general knowledge, skills development</i>	Elective		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION AND EXAMINATION:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES, IN ENGLISH (UPON REQUEST)		
COURSE WEBPAGE (URL)			

(2) LEARNING OUTCOMES

Learning Outcomes

Describe the learning outcomes of the course, namely the specific knowledge, skills and competences of the appropriate level that students will acquire after successful completion of the course.

Consult Annex A: Description of the level of learning outcomes for each study cycle according to the Qualifications Framework of the European Higher Education Area; Level Descriptors 6, 7 and 8 of the European Qualifications Framework for Lifelong Learning; and Annex B: Summary Guide for Writing Learning Outcomes.

The aim of the course is to familiarise students with contemporary applications of Geoinformatics, with emphasis on practical methods for collecting, processing, analysing and presenting geospatial data for the management of the natural and human environment.

Upon successful completion of the course, students will be able to:

- design and apply basic sampling methods and field data collection procedures,
- use field instruments such as GPS/GNSS, sensors for measuring environmental parameters and remote sensing instruments,
- process, analyse and visualise geospatial data in GIS environments,
- apply spatial interpolation methods for estimating and mapping variables in space,
- use participatory mapping and data-collection tools, such as Survey123-type applications,
- develop basic web mapping and WebGIS applications,
- use introductory cloud-based environments for processing large volumes of remote sensing and geospatial data.

General Competences

Taking into account the general competences that graduates should have acquired, as listed in the Diploma Supplement, indicate which of these the course aims to develop.

Search, analysis and synthesis of data and information, using the necessary technologies
Adaptation to new situations
Decision-making
Independent work
Teamwork
Work in an international environment
Work in an interdisciplinary environment
Generation of new research ideas

Project design and management
Respect for diversity and multiculturalism
Respect for the natural environment
Demonstration of social, professional and ethical responsibility and sensitivity to gender issues
Exercise of criticism and self-criticism
Promotion of free, creative and inductive thinking
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Other...
.....

Through lectures, laboratory exercises, fieldwork and applied assignments, students develop the following general competences:

- Search, analysis, synthesis and evaluation of geospatial data and environmental information.
- Use of Information and Communication Technologies, GIS, WebGIS and specialised Geoinformatics software.
- Independent work and teamwork in the context of laboratory and applied activities.
- Critical thinking, decision-making and evidence-based selection of geospatial analysis methodologies.
- Design and management of a small applied study using geospatial data.

- Production, interpretation and communication of thematic maps and results to scientific and applied audiences.
- Respect for the natural environment and support for evidence-based decision-making.

COURSE CONTENT

The aim of the course is to familiarise students with contemporary applications of Geoinformatics, with emphasis on practical methods for collecting, processing, analysing and presenting geospatial data. Within the course, students will be taught basic sampling methods and will become familiar with the use of field instruments, such as remote sensing instruments, GPS/GNSS and sensors for measuring environmental parameters.

The course will also cover applications of spatial interpolation for estimating and mapping variables in space, as well as participatory mapping tools, such as Survey123-type applications, for collecting data from users and stakeholders.

In addition, students will be introduced to the development of web mapping and WebGIS applications, with the aim of creating dynamic cartographic applications and presenting geospatial information on the web.

Finally, the course will include an introduction to cloud-based platforms for processing large volumes of remote sensing and geospatial data. In this way, students will acquire practical skills in the use of modern Geoinformatics tools for environmental monitoring, mapping and decision-making applications.

(4) TEACHING AND LEARNING METHODS - ASSESSMENT

DELIVERY MODE <i>Face-to-face, distance learning, etc.</i>	Face-to-face teaching in the classroom, preparation of assignments, and the possibility of distance teaching if deemed necessary.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES <i>Use of ICT in teaching, laboratory training and communication with students</i>	Use of electronic media during lectures and laboratory training, as well as use of the e-class platform for communication with students. Use of specialised free and commercial software for the processing, analysis and presentation of geospatial data, including GIS/Remote Sensing software, field data collection applications, participatory mapping tools, WebGIS tools, open satellite data platforms and cloud-based analysis environments.	
TEACHING ORGANISATION <i>The teaching methods are described in detail: lectures, seminars, laboratory exercises, fieldwork, study and analysis of bibliography, tutorials, project work, report writing, interactive teaching, educational visits, etc.</i> <i>The student workload for each learning activity and the hours of independent study are indicated according to the principles of ECTS.</i>	Activity	Semester Workload
	Lectures	13
	Laboratory Exercises (supervised)	26
	Assignments	30
	Independent Study	58
	Course Total	127
STUDENT ASSESSMENT <i>Description of the assessment process</i> <i>Language of assessment, assessment methods, formative or summative assessment, multiple choice tests, short-answer questions, essay questions, problem solving, written assignment, report, oral examination, public presentation, laboratory work, etc.</i> <i>Clearly defined assessment criteria are stated, including whether and where they are accessible to students.</i>	Language of assessment: Greek Assessment methods: • Final written examination with questions on comprehension, critical analysis and application of Geoinformatics methodologies. • Laboratory exercises and/or individual or group applied assignment using geospatial data. • Presentation and documentation of the results of the applied assignment, where required. The assessment criteria and weighting are announced at the beginning of the semester.	

(5) RECOMMENDED BIBLIOGRAPHY

- Recommended bibliography:

- Shellito, B. A. (2021). ArcGIS Pro Guide (3rd ed.; scientific editor of Greek edition: A. Tsatsaris). Tziola Publications.
- Liu, J. G., & Mason, P. J. (2024). Επεξεργασία εικόνας και ΣΓΠ στην Τηλεπισκόπηση. Επιστημονική επιμέλεια: Γεώργιος Π. Πετρόπουλος & Μιχαήλ Φουμέλης. Εκδόσεις Δίσιγμα.