COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Agricultural Sciences		
ACADEMIC UNIT	Biosystems & Agricultural Engineering		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**BAE_450**	**SEMESTER**	**4TH**
COURSE TITLE	**GEOGRAPHIC INFORMATION SYSTEMS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	
Tutorials	0	
Laboratory	2	
TOTAL	**5**	**5**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Background General Knowledge Skills development
PREREQUISITE COURSES:	There are no prerequisite courses.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek .-For Erasmus students in English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The objectives of this course are for students to understand:

• the principles and importance of Geographic Information Systems

• the concepts of spatial data, continuous and discrete

• the concepts of vector and mosaic data

• spatial databases

• methods of processing vector and mosaic data

• cartography

Upon completion of the course students should be able to understand and apply:

• the characteristics and properties of digital geographic data

• recognize and manage vector and mosaic data

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

Search, analysis and synthesis of data and information, using the necessary technologies
Production of new research ideas
Respect for the natural environment
Promoting free, creative and inductive thinking

(3) SYLLABUS

Lesson 1: Historical background, introductory concepts and definitions, general applications
Lesson 2: Geographic Information Systems Data, Data Formats, Types of Spatial Objects or Elements, Performance of Spatial Measurements
Lesson 3: Spatial data structures (or models)
Lesson 4: Converting Vector-Mosaic Data, Capturing - Value Grid
Lesson 5: Databases
Lesson 6: Imaging the Earth - Projectors, Scale Concepts
Lesson 7: Cartography
Lesson 8-10: Data processing and analysis, - Vector Data
Lesson 11-13: Data processing and analysis, - Mosaic data

The course also includes fieldwork on sampling issues.

LABORATORY EXERCISES
Exercise 1-2: Introduction of Spatial and Descriptive Data
Exercise 3: Database Management
Exercise 4-5: Drawing maps
Exercise 6-7: Spatial analyzes
Exercise 8: 3D illustration of ground

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching, Experiential activities, Laboratory training
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of ICT (power point) in Teaching • Use of ICT (power point) in Laboratory Training • Use of ICT in Communication with students (Learning process support through the electronic platform e-class).
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.*	

Activity	***Semester workload***
Lectures	39
lab	26
UNGUIDED STUDY	30
Study hours. Literature survey	30
Course total	***125***

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	1. The main assessment criteria focus on understanding and correlating the knowledge that students gain from the course with other knowledge. Particular emphasis is placed on whether they have developed the ability to apply this knowledge to crop selection and to assess the impact of these changes on the environment. Emphasis is also placed on demonstrating critical ability and justifying the choices they make in each problem. 2. Evaluation is dynamic. It mainly involves problem solving. is done orally or in writing or with a combination of the two, with or without pre-examination on the basic principles of the course, with or without exculpatory advances and with other test or inventive methods, depending on the composition of the dynamics and the needs of the audience. 3. The above are done in the Greek language. For foreign language students (eg Erasmus students) conducted in English

(5) ATTACHED BIBLIOGRAPHY

- *P. A. Burrough, Rachel A. McDonnell (1998) Principles of Geographical Information Systems (Spatial Information Systems)*
- *Karen K. Kemp (Editor) (2008) Encyclopedia of Geographic Information Science, SAGE Publications, Inc.*
- *Ian Heywood, Sarah Cornelius, Steve Carver (2011)An Introduction to Geographical Information Systems*
- *George Korte (2001)The GIS Book 5th Edition*
- *Κωστής Κουτσόπουλος (2002) Γεωγραφικά συστήματα πληροφοριών και ανάλυση χώρου Εκδόσεις Παπασωτηρίου*

Other sources

- International Journal of Geographical Information Systems
- Progress in Physical Geography
- Applied Geography
- GIScience and Remote Sensing
- Geographical Journal
- ISPRS International Journal of Geo-Information
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
- GeoInformatica