COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF ENVIRONMENT AND AGRICULTURAL ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF NATURAL RESOURCES DEVELOPMENT AND AGRICULTURAL ENGINEERING		
LEVEL OF STUDIES	postgraduate		
COURSE CODE	**630036**	**SEMESTER**	**1o**
COURSE TITLE	Special Issues of Irrigation and Drainage simulation		

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 and Practical Exercises	2	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*	General knowledge, Scientific Area, Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/5955/

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 main purpose of the course is to find easy-to-use numerical methods for simulating Irrigation and Drainage problems.

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

• Construct a mathematical model that describes a specific physical problem of Irrigation and Drainage.

• To choose the appropriate method of numerical solution of the mathematical model.

• To choose the appropriate discretization scheme of numerical solution.

• To create a code in FORTRAN programming language.

• To make use of the results obtained by running the code, making useful conclusions about the given physical problem.

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…*
	…….

1. *Search, analysis and synthesis of data and information*
2. *Autonomous Work*
3. *Teamwork*
4. *Promotion of free, creative and inductive thinking*

3. SYLLABUS

Basic types of partial differential equations.

The method of finite differences.

Mathematical simulation and numerical solution of soil physics, irrigation and drainage problems.

Developing codes in FORTRAN programming language.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Information and Communication Technologies in Teaching in Laboratory Education and in Communication with students.
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.* *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*	See table below
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.*	I. Written final exam (70%) which includes: Short Answer Questions, Essay Development Questions, Problem Solving. II. Oral examination - Presentation of Exercises and Studies (30%).

Activity	***Semester workload***
Lectures	24 hours
Practical exercises focusing on the application of methodologies and analysis of case studies.	65 hours
Exercises and presentations	36 hours
Course total	***125***

5. ATTACHED BIBLIOGRAPHY

Proposed literature:

Σ. Ελμαλόγλου. Αριθμητική προσομοίωση προβλημάτων Γεωργικής και Περιβαλλοντικής Υδραυλικής, Αθήνα 2009. (In Greek)