COURSE OUTLINE

(1) GENERAL

SCHOOL	Environment and Agricultural Engineering		
ACADEMIC UNIT	Natural Resources Management and Agricultural Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**1565**	SEMESTER	5o
COURSE TITLE	Environmental Soil science and Soil Management		

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	3
Laboratory practice	2	2
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*	Scientific
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (English)
COURSE WEBSITE (URL)	http://openeclass.aua.gr/modules/auth/opencourses.php?fc=8 http://openeclass.aua.gr/courses/AFPGM109/ http://openeclass.aua.gr/modules/document/document.php?course=AFPGM109 http://www.afp.aua.gr/?page_id=63&did=108 http://www.afp.aua.gr/?page_id=63&did=123 http://www.afp.aua.gr/?page_id=63&did=107

(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 course is an introduction to principles of applied chemistry and physic chemistry of soils and aims to link related issues to the effective and sustainable soil resources management.
Students develop abilities to critically analyze and evaluate factors and variables that determine soil properties directly connected to chemical reactions and equilibria in soils. Special emphasis is given on the role of soil colloids.

Passing successfully course exams, the student will be able to:

- understand fundamental mechanisms and rules that influence/determine soil properties and chemical equilibria in soils.
- critically assess important factors that define the chemical/physic chemical behavior of a soil system
- propose measures for sustainable management of marginal/degraded soils in terms of soil chemistry

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

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Team work
- Working in an interdisciplinary environment
- Respect for the natural environment
- Production of free, creative and inductive thinking

(3) SYLLABUS

Chemistry of organic and inorganic soil colloids
Equlibria in soil water interface
Sorption – desorption mechanisms and models
Soil aeration and soil redox potential
Soil acidity
Soil water quality

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face,
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	**Power point. Communication with students via email and social media (close group). Support of the learning procedure by e-class platform and educational material platform of NRM&AE webpage**
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*	
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.*	Final written examination that includes: - multiple choice questionnaires - short – answer questions - problem solving - assessment of different scenarios - Comparative evaluation of theoretical aspects

Activity	*Semester workload*
Lectures	36
Laboratory practice	24
Team work on small personalized work	20
Study	45
Course total	***125***

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- Related academic journals:

1. N.C Brady and R.R. Weil, 2011. Εδαφολογία, η φύση και οι ιδιότητες των εδαφών. 14th edition, απόδοση στα ελληνικά, *Εμβρυο, Σελ. 973.*
2. M.B. McBride, 1994. Environmental Chemistry of Soils. *Oxford University Press*, P 406
3. D.L. Sparks, 1995. Environmental Soil Chemistry. *Academic Press*, P. 267