# COURSE OUTLINE

## 1. GENERAL

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| **SCHOOL** | ENVIRONMENT AND AGRICULTURAL ENGINEERING | | |
| **ACADEMIC UNIT** | DEPARTMENT OF NATURAL RESOURCES DEVELOPMENT AND AGRICULTURAL ENGINEERING | | |
| **LEVEL OF STUDIES** | UNDERGRADUATE | | |
| **COURSE CODE** | **1335** | **SEMESTER** | 8TH |
| **COURSE TITLE** | SOIL MAPPING AND SOIL SURVEY COMPILATION | | |

| **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 exercises and field work | 2 | 2 |
| *Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).* | | |

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| **COURSE TYPE** *general background, special background, specialised general knowledge, skills development* | Scientific field |
| **PREREQUISITE COURSES:** | Soil science<br>Soil genesis and soil taxonomy<br>Geographical Information Systems |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | YES (in English language) |
| **COURSE WEBSITE (URL)** | https://oeclass.aua.gr/eclass/courses/5237/ |

## 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 aims** at the acquisition of theoretical and practical knowledge on the basic principles and concepts of soil mapping as a methodology for the organization of pedological and soil information for soil survey compilation.

**Upon successful completion of the course, the postgraduate students will have:**

- Understand the fundamental theoretical concepts used in soil mapping.
- Understand the interactive relationship between the nature and purpose of different types of soil surveys and mapping scale.
- Understand the value, structure, and use of general and specific purpose soil surveys at different mapping scales.
- The ability to delineate and describe the soil mapping units of a typical soil map, based on the Greek soil mapping system, using existing data.
- The ability to interpret the results of soil mapping and to combine the descriptions of the various macroscopic, taxonomic or laboratory measured soil properties in the context of a soil survey compilation.

**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?*

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|---|---|
| *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 for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Working independently
- Team work
- Project planning and management
- Respect for the natural environment

## 3. SYLLABUS

**Section 1: General principles of soil mapping on soil survey compilation.**
Purpose of soil mapping. Soil mapping scale. Relationships of minimum legible area on the map to the purpose and scale of soil mapping. Types of soil surveys and relation to mapping scale. The concepts of the soil pedon, soil typological units and Soil Mapping Units (SMUs).

**Section 2: Soil mapping methods.**
Effect of geomorphology on the formation of soils. Systematic and physiographic method of soil mapping. Techniques for the preliminary delimitation of SMUs. The catena concept.

**Section 3: Elements on digital mapping of top-soil properties.**
Main differences between conventional soil mapping and digital mapping of the top-soil properties, sources of soil and accompanying environmental data used in digital soil mapping.

**Section 4: International soil classification systems in soil mapping and soil survey compilation.**
Presentation of the USDA and FAO soil classification systems. Correlations of Soil Classes and Reference Soil Groups. Relationship of the soil mapping scale to the soil taxonomy level used and the type of soil survey.

**Section 5: The mapping system of the agricultural soils in Greece.**
The Greek cartographic symbol of the SMUs. The properties of the cartographic symbol.

**Section 6: The soil map of the agricultural soils in Greece.**
The basic characteristics of the autochthonous and allochthonous agricultural soils of Greece. The geographical distribution of the main Reference Soil Groups of Greece. The Greek geoinformation system of agricultural soils' data. The soil survey of the agricultural soils' map in Greece.

**Section 7: Compilation of soil surveys.**
Types and purpose of soil surveys. Soil surveys' structure. Required data for the compilation of a soil survey.

**Section 8: Typical soil surveys and new trends in describing soil mapping data.**
The conventional soil surveys of the past in Greece. Contemporary trends in the compilation of soil surveys in Greece.

## 4. TEACHING and LEARNING METHODS - EVALUATION

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| **DELIVERY**<br>*Face-to-face, Distance learning, etc.* | In classrooms and remotely when needed. |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY**<br>*Use of ICT in teaching, laboratory education, communication with students* | Use of ICT in teaching, laboratory education, communication with students |
| **TEACHING METHODS**<br>*The manner and methods of teaching are described in detail.*<br>*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.*<br><br>*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**<br>*Description of the evaluation procedure*<br><br>*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*<br><br>*Specifically-defined evaluation criteria are given, and if and where they are accessible to students.* | The evaluation will be conducted in Greek, except in the case of Erasmus students, for which will be in English.<br><br>The grade in the theory of the course is obtained exclusively from the final written examination in multiple-choice and short-answer questions.<br><br>The grade in the laboratory part of the course is based solely on the compilation and presentation of the soil survey. |

| ***Activity*** | ***Semester workload*** |
|---|---|
| Lectures | 48 |
| Laboratory exercises and field work | 20 |
| Compilation of a soil survey by using existing data | 42 |
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| Course total | ***125*** |

## 5. ATTACHED BIBLIOGRAPHY

*- Suggested bibliography:*


- *Forbes T., Rossiter D., Van Wambeke A., 1987. Guidelines for Evaluating the Adequacy of Soil Resources Inventories 1982 Soil Management support series Technical Monograph vol 4. Chapter 1. pp.1-4*
- *United States Department of Agriculture (Soil Science Division Staff 2017 Soil survey manual. C Ditzler K Scheffe and H C Monger eds USDA Handbook 18 Government Printing Office, Washington, D C. Chapter 4. pp. 279-283; pp. 290-294.*
- *Kairis O, Dimitriou V, Aratzioglou C, Gasparatos D, Yassoglou N, Kosmas C, Moustakas N. A Comparative Analysis of a Detailed and Semi-Detailed Soil Mapping for Sustainable Land Management Using Conventional and Currently Applied Methodologies in Greece. Land. 2020; 9(5):154. https://doi.org/10.3390/land9050154*