**SYLLABUS** (MODULE-ERASMUS+)

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| Course/module (as specified in the approved curriculum for the field of study) **Soil science and classification** | ECTS**3** | Component code**ENVI 3.5** |
| Name in Polish**Gleboznastwo i systematyka gleb** |
| Unit(-s) providing the course/module (Faculty, Institute/Department)**Faculty of Environmental and Mechanical Engineering, Department of Soil Science, Land Reclamation and Geodesy** |
| Head of course/module (e-mail address)**Jolanta Komisarek, Prof. (****jolanta.komisarek@up.poznan.pl****)**  |
| Other teachers- |
| Course category**Open** | Language**English** | Level**Bachelor/Master** | Profile**Academic-general** | Semester**Summer** |
| **TYPE OF CLASSES/LECTURES AND THE NUMBER OF HOURS**(organised classes/lectures and self-study) |
| Type of studies: full-time |  | Type of studies: extramural |  |
| * lectures
 | 10 | * lectures
 | - |
| * practical classes
 | 10 | * practical classes
 | - |
| * field exercise
 | -  | * field exercise
 | - |
| * other lessons
 |  - | * other lessons
 | - |
| * self-study
 |  55 | * self-study
 | - |
| Total number of hours: | 75 | Total number of hours: | - |
| **PRE-REQUSITES**None. |
| **OBJECTIVE OF COURSE/MODULE**During this course student with get knowledge about the basic role and importance of soil in the natural environment, its physical and physico-chemical properties and methods of their determination. Participants will learn how to assess soil properties, describe soil profile in the field and on this basis determine the type, subtype, type and species of soil in the field. |
| **TEACHING METHODS**Lecture with multimedia presentation.Laboratory exercises - simple analysis to determinate of soil properties.Field exercises – description and classification of soil profiles.Possibility to use distance learning tools and techniques. |
| **LEARNING OUTCOMES** | Referenceto field outcomes |
| Knowledge | O1: Students will have advanced knowledge about the role and importance of soil in the natural environment.O2: Students will know the importance of the soil environment in the circulation of water and dissolved substances.O3: Students will know the principles of soil samples collection for laboratory analysis. He knows the meaning measurements and description of basic morphological, water and chemical parameters. | Notapplicable |
| Skills | O4: Students will have skills to performs under the supervision physicochemical analyses of soil samples.O5: Students will be able to use the measurement and laboratory equipment used in soil science analyses in accordance with the principles of health and safety at work.O6: Students will have skills to conducts necessary field test and describe soil profile. On this basis participants will be able to classified soil types. | Notapplicable |
| Socialcompetences | O7: Students will be aware of the importance and understands the non-technical effects of engineering activities including its impact on the soil environment and the associated responsibility for decisions.O8: Students will understand the need to learn and inspire others to protect soilenvironment and its meaning for wellbeing of society. | Notapplicable |
| **METHODS TO VERIFY LEARNING OUTCOMES**Written test.Active participants in discussion. | Outcome ReferenceNumbersO1-O6O1-O8 |
| **TEACHING CONTENT****Lectures**: 1. Definition of soil, place and role of soil in the natural environment, importance of soil in agricultural production.
2. Soil genesis and evolution. Weathering processes and cycles of substance circulation in geocomplexes.
3. Soil-forming processes shaping the structure and soil properties.
4. Soil as a polyheteride dispersion three-phase system. Soil texture and mineralogical composition of soil.
5. Soil density and individual components. Potential of soil water.
6. Soil water retention and water flow in soil.
7. Soil air. Thermal properties of soils.
8. The phenomena of sorption and exchange of cations and anions in the system of solid phase soil solution.
9. Soil organic matter and its role in shaping physical and chemical properties. Soil organisms.
10. Soil classification.

**Practical classes:** 1. Methods of soil texture determination.
2. Determination of soil densities.
3. Physcio-chemical properties of soil, methods of determination.
4. Soil organic matter determination.
5. Soil description in the field.
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| **Forms and criteria for passing of course/module** Results of the written test.Active participation during the course. | Percentage of final mark85%15% |
| **LIST OF LITERATURE** 1. N.C. Brady: The nature and properties of soils. Macmillan Publishing Company.
2. M. J. Singer, D.N. Munns: Soil an introduction. Macmillan Publishing Company.
3. N. van Breemen, P. Buurman: Soil Formation. Kluwer Academic Publisher.
4. Essington M. E. Soil and water chemistry. An integrative approach. CRC Press.
5. World reference base for soil resources 2006 A framework for international classification, correlation and communication, 2018.
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