# SOIL GENESIS AND CLASSIFICATION

| | | | |
|---|---|---|---|
| 1 | Course Title: | SOIL GENESIS AND CLASSIFICATION | |
| 2 | Course Code: | TPR4901 | |
| 3 | Type of Course: | Compulsory | |
| 4 | Level of Course: | First Cycle | |
| 5 | Year of Study: | 4 | |
| 6 | Semester: | 7 | |
| 7 | ECTS Credits Allocated: | 4.00 | |
| 8 | Theoretical (hour/week): | 2.00 | |
| 9 | Practice (hour/week): | 2.00 | |
| 10 | Laboratory (hour/week): | 0 | |
| 11 | Prerequisites: | none | |
| 12 | Language: | Turkish | |
| 13 | Mode of Delivery: | Face to face | |
| 14 | Course Coordinator: | Prof. Dr. ERTUĞRUL AKSOY | |
| 15 | Course Lecturers: | yok | |
| 16 | Contact information of the Course Coordinator: | Uludağ Üniversitesi, Ziraat Fakültesi,<br>Toprak Bilimi ve Bitki Besleme Bölümü<br>16059 Görükle Kampüsü, Nilüfer/Bursa<br>Tel: 0-224-2941534<br>E-posta: aksoy@uludag.edu.tr | |
| 17 | Website: | | |
| 18 | Objective of the Course: | To gain knowledge and skills on:<br>Soil formation and soil forming factors; Soil characteristics and identification; description of physical, chemical and morphological properties of soils in the field; writing profile description cards; basic principles of the soil classification systems; classification systems and soil classification. | |
| 19 | Contribution of the Course to Professional Development: | Interpret the formation of soil profiles, define and sample their physical, chemical and morphological properties in the field. Knows soil classification systems. | |
| 20 | Learning Outcomes: | | |
| | | 1 | To implement the description of soil profile and horizons in the field. |
| | | 2 | To interpret the weathering in soil formation, soil formation and soil forming factors, the effects of soil forming factors on soil characteristics and their distribution. |
| | | 3 | To comprehend the basic principles of soil classification. |
| | | 4 | To comprehend the Soil Taxonomy and WRB (FAO/Unesco) soil classification systems widely used in Turkey. |
| | | 5 | To comprehend the classification of soils according to Soil Taxonomy and WRB (FAO/Unesco ) soil classification systems using field and laboratory data |
| | | 6 | |
| | | 7 | |
| | | 8 | |
| | | 9 | |
| | | 10 | |
| 21 | Course Content: | | |

| | Course Content: | |
|---|---|---|
| Week | Theoretical | Practice |
| **1** | -Introduction<br>-Definition of soil and basic principles on soil concept<br>-Soil morphology | -Introducing the Soil Survey and Mapping Laboratory.<br>-provide information on field works planning through the semester.<br>-give information about the equipments used at field work. |
| **2** | -Characterization of the composition of soil<br>-weathering on soil formation | -physical, geo-chemical, biological and pedo-chemical weathering and decomposition products (visual presentation). |
| **3** | -Soil forming factors | -effects of parent material and topography to soil formation (visual presentation)<br>-Effects of topography to soil erosion and soil formation (visual presentation). |
| **4** | -Effects of the climate to soil formation<br>-Biological events in soil formation<br>-Time factor in soil formation | -Field work 1, and subject of Homework-1; Describing the horizons, fill in the soil description cards, disturbed and undisturbed soil sampling from horizons. |
| **5** | -Pedogenic processes<br>-Formation of Alluvial and organic soils | -Field work-2:<br>Alluvial soils, on site observation. |
| **6** | Soil classification concept | Reporting the profile identification cards. |
| **7** | Soil classification concept, presentation of profiles described at the field | Explanation of results of Homework-1 and discussion on field work. |
| **8** | Basic Principles and structures of Soil Taxonomy, Categorical level, Diagnostic horizons, Orders and suborders. | - Field work-3 (and subject of Homework-2) Students are divided into groups to describe and sample soil profile and horizons themselves. Description of soil profiles made according to Soil Taxonomy. |
| **9** | -Aridisols<br>-Mollisols | Properties of soils classified as Aridisol, Mollisol and Alfisol Orders (visual presentation) |
| **10** | -Spodosols<br>-Ultisols | -Use of Keys to soil taxonomy guide. |
| **11** | -Oxisols<br>-Histosols | Properties of soils classified as Oxisol, Histosol and Gelisol Orders (visual presentation) |
| **12** | The WRB (FAO/Unesco) Soil classification | Use of WRB(FAO/Unesco) soil classification system |
| **13** | | - explanation of results of Homework-2 and discussion<br>semester.<br>- Focuses on issues and problems according to the wishes of the students. |
| **14** | presentation and evaluation of homework reports | Evaluation of home-work reports, Disclosure of possible errors. |

| Activites | Number | Duration (hour) | Total Work Load (hour) |
|---|---|---|---|
| Theoretical | 14 | 2.00 | 28.00 |
| Practicals/Labs | 14 | 2.00 | 28.00 |
| Self study and preperation | 14 | 2.00 | 28.00 |
| Homeworks | 2 | 2.00 | 4.00 |
| Projects | 0 | 0.00 | 0.00 |
| Field Studies | 0 | 0.00 | 0.00 |
| Midterm exams | 1 | 16.00 | 16.00 |
| Others | 0 | 0.00 | 0.00 |
| Final Exams | 1 | 20.00 | 20.00 |
| Total Work Load | | | 124.00 |
| Total work load/ 30 hr | | | 4.13 |
| ECTS Credit of the Course | | | 4.00 |

| | | |
|---|---|---|
| **22** | Textbooks, References and/or Other Materials: | Dinç, U., Kapur, S., Özbek, H., Şenol, S.1999. Toprak Genesisi ve Sınıflandırması, 3.baskı. Çukurova Üniversitesi Ziraat Fakültesi Ders Kitabı No:C-130, ÇÜZF, Adana.376s.<br><br>Diressen, P.M., Dudal R., 1989. Lecture Notes on the Geography, Formation, Properties and use of the Mojor Soils of the World. Agricultural Univ. Wageningen.<br><br>Fanning, D.S. and M.C.B. Fanning, 1989. Soil: Morphology, Genesis and Classification,. John Wiley and Sons, USA . 395p.<br><br>Schoeneberger, P.J., D.A. Wysocki, E.C. Benham and W.D. Broderson, 2002. Field Book for Describing and Sampling Soils, Version 2.0, p: 189. National Soil Survey Center, Lincoln., NE.USDA-NRCS.<br><br>Soil Survey Staff 1999. Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys. 2nd edn. USDA-NRCS Agric. Handbook No. 436. US Government Printing Office, Washington, DC, USA, 871 p.<br><br>Soil Survey Staff 2014. Keys to Soil Taxonomy. Twelfth ed. USDA-NRCS. US Government Printing Office, Washington DC, USA, 353 p.<br><br>FAO/UNESCO, 1990. FAO-Unesco Soil Map of the World, Revised Legend, p: 119. World soil resources report No: 60, FAO, Rome, Italy<br><br>FAO.,1990. Guidelines for Soil Profile Description, Rome, Italy<br><br>Burt, R. (ed.) 2004. Soil Survey Laboratory Methods Manual. Soil Survey Investigations Report No. 42, version 4,0. USDA-NRCS, US Government Printing Office, Washington, DC, USA, 700 p. |
| **23** | Assesment | |

| **TERM LEARNING ACTIVITIES** | **NUMBER** | **WEIGHT** |
|---|---|---|
| Midterm Exam | 1 | 20.00 |
| Quiz | 0 | 0.00 |
| Home work-project | 2 | 20.00 |
| Final Exam | 1 | 60.00 |
| Total | 4 | 100.00 |
| Contribution of Term (Year) Learning Activities to Success Grade | | 40.00 |
| Contribution of Final Exam to Success Grade | | 60.00 |
| Total | | 100.00 |
| Measurement and Evaluation Techniques Used in the Course | | Midterm exam, homework, attandes performance to lecture, practice exam and final exam |

**24 ECTS / WORK LOAD TABLE**

**25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**

| | **PQ1** | **PQ2** | **PQ3** | **PQ4** | **PQ5** | **PQ6** | **PQ7** | **PQ8** | **PQ9** | **PQ10** | **PQ11** | **PQ12** | **PQ13** | **PQ14** | **PQ15** | **PQ16** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ÖK1** | 5 | 4 | 0 | 5 | 4 | 4 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ÖK2** | 5 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 0 | 0 | 0 |
| **ÖK3** | 5 | 4 | 0 | 5 | 0 | 0 | 4 | 4 | 3 | 5 | 5 | 3 | 0 | 0 | 0 | 0 |
| **ÖK4** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ÖK5** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**LO: Learning Objectives PQ: Program Qualifications**

| **Contribution Level:** | **1 very low** | **2 low** | **3 Medium** | **4 High** | **5 Very High** |
|---|---|---|---|---|---|