| **1. Course title:** Introduction to Pedology | | | | |
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| **2. Code:** | | **3. Type (lecture, seminar, laboratory):** laboratory | | |
| **4. Total of contact hours:** 43 hours | | **5. Number of credits (ECTS):** 4 | | |
| **6. Pre-requisites (max. 3):** none | | | | |
| **7. Announced:** ☒ autumn semester, ☐ spring semester, ☐ both semesters | | | | |
| **8. Limit for participants:** no | | | | |
| **10. Instructor-in-charge (faculty, institute and department):**  Szabolcs CZIGÁNY, PhD (FS, Institute of Geography, Department of Physical Geography and Environment) | | | | |
| **11. Instructor(s) and percentage:** | | Szabolcs CZIGÁNY | | 90 % |
| József DEZSŐ | | 10 % |
| **12. Language:** English | | | | |
| **13. Course objectives and learning outcomes:**  Specific objectives:  1. To provide an understanding of the physical properties of soils  2. To provide a quantitative discussion of static and dynamic soil physical, chemical and biological processes  3. To apply soil physical and geographical concepts to contemporary problems in soil and water re-  sources management  The general goal of the course is to provide an insight into the complex zonal knowledge on climate-vegetation-fauna-soil relations and soil management, which may generate a sound foundation for the subsequent global geographical studies. Students will also be expected to understand the basic models and nexus of soil science and pedology, and the role of soils on agriculture, crop production and global economy, as well as human welfare.  Students who successfully complete the course will have an understanding of the methodological and theoretical basis of pedology and soil sciences. On successful completion of the course students are expected to be able to understand the basic processes in the pedosphere. They also will be able to collect relevant data to analyse and identify the role of soils, soil physical, chemical and biological processes on global systems, including human society and economy. They also will be able to critically evaluate and judge the problems and issues related to soil health, soil contamination and the general condition of soils as integral parts of the global ecosystems. They also work independently on soil-related ecological and interdisciplinary problems and present them to decision makers and stakeholders. They will be able to assess and comprehend data and literature related to soil science, pedology and ecosystem analysis. | | | | |
| **14. Course outline / Milestones**  Week 1: Introduction on the protocol of the laboratory exercises, and the general format of the lab reports  Week 2: Definition and physical properties of soils. Soil texture. Determination of particle size distribution by dry sieving.  Week 3: Stokes’ law. Sedimentation. Measurement of PSD with a hydrometer.  Week 4: Soil formation: Pedogenesis and Weathering. Soil forming factors. Measurement of PSD: the pipet method.  Week 5 : Soil contamination, soil remediation.  Week 6: Soil chemical properties. Clay minerals. Measurement of the carbonate content of soils.  Week 7: Midterm exam  Fall break:  Week 8: Soil biology. Description of a soil profile.  Week 9: Soil Taxonomy 1/Determination of saturated hydraulic conductivity.  Week 10: Soil Taxonomy 2//Capillary rise in soils. Pedology 1.  Week 11: Soil Taxonomy 3/Measurement of soil moisture. Pedology 2.  Week 12: Determination of PSD with a static light (laser) scattering (demonstration only). Pedology 3.  Week 13: Soil fertility. Nutrients in soils. Determination of soil organic matter content. Pedology 4. | | | | |
| **15. Mid-semester works**  7 lab reports | | | | |
| **16. Summative assessment, formative assessment**  Midterm exam (written): 30%  Final exam (written): 40%  Laboratory reports and in-class activity: 30%  Percentage of collected points is calculated compared to the possible maximum number of points  0-50%: fail/grade 1; 50-60%: grade 2; 60-75%: grade 3; 75-85%: grade 4; 85% and above: grade 5. | | | | |
| **17. Reading assignments:**   1. Markus Flury: Soil Physics laboratory exercises (uploaded to NMS) 2. Miller, R. W. and Gardiner, T. D.: Soils in our Environment. Prentice Hall, Upper Saddle river, NJ | | | | |
| **18. Recommended texts:** | | | | |
| **Date** | 13 November, 2017 | **Prepared** |  | |
| Szabolcs CZIGÁNY PhD  instructor-in-charge | |
| **Endorsed** | | |  | |
| András TRÓCSÁNYI PhD leader of the program | |