



No. _____ / _____

USAMV form 0102010109

SUBJECT OUTLINE

1. Information on the programme

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca
1.2. Faculty	Agriculture
1.3. Department	I – Technical and Soil Sciences
1.4. Field of study	Agronomy
1.5. Cycle of study ¹⁾	Bachelor of Science
1.6. Specialization/Study programme	Agriculture
1.7. Form of education	Full time

2. Information on the discipline

2.1. Discipline name	Pedology 1							
2.2. Course coordinator	Prof.dr. Laura Paulette							
2.3. Seminar/laboratory/project coordinator	Lecturer dr. Buta Mihai							
2.4. Year of study	I	2.5. Semester	2	2.6. Evaluation type	Summative	2.7. Discipline status	Content ²⁾	DD
							Compulsoriness ³⁾	DI

3. Total estimated time (teaching hours per semester)

3.1. Hours per week – full time programme	4	out of which: 3.2. course	2	3.3. seminar/ laboratory/ project	2
3.4. Total numbers of hours in the curriculum	56	out of which: 3.5. course	28	3.6. seminar/laboratory	28
Distribution of time allotted					hrs.
3.4.1. Study based on books, textbooks, bibliography and notes					22
3.4.2. Additional documentation in the library, electronic platforms and field experiences					15
3.4.3. Preparing seminars / laboratories / projects, reports, portfolios and essays					15
3.4.4. Tutorial					2
3.4.5. Examinations					10
3.4.6. Other activities					
3.7. Total hours of individual study	64				
3.8. Total hours per semester	120				
3.9. Number of credits ⁴⁾	4				

4. Prerequisites (if applicable)

4.1. curriculum related	Ecology, Botantics, Agrometeorology
4.2. skills related	Knowledge regarding the components and functions of the edaphic system

5. Conditions (if applicable)

5.1. for the course	Teaching is interactive, illustrated with photos and drawings in Power Point. It aims a direct response of the information presented (question and answer) by both, teacher and students. Academic discipline enforce the start time and end of the course. It is not allowing any other activities during the lecture, mobile phones are closed.
5.2. for the seminar/laboratory/project	Physical and chemical analysis of soil are performed during the practical works in the laboratory and on the field soil profile morphology is analyzed. Under the direct supervision of practical framework, each student will conduct an individual work with laboratory materials provided and described in the guide for practical work. Academic discipline is required throughout the duration of the works.

Professional competences	<p>Knowledge of the factors and processes of soil formation in order to assess land use.</p> <p>To understand the ways of identify and interpreting the restrictive factors of soil.</p> <p>To be able to achieve taxonomic frame of soils.</p> <p>To analyze and apply practically the importance of physical and chemical properties in obtaining agricultural production.</p> <p>Knowledge of soil properties in order to use them in accordance with differentiated application of the cultivation technologies</p>
Transversal competences	<p>Demonstrate practical skills in identifying the productive capacity of agricultural soils / lands.</p> <p>To be able to practically identify in field and laboratory the properties of the soil.</p> <p>To be able to organize the development of the laboratory protocol..</p> <p>To develop resource management strategies of edaphic system (best management practices).</p> <p>To be able to offer farmers advice on how to manage the edaphic resource.</p> <p>To participate in research activities in the field.</p>

7. Disciplines objectives (based on the cumulated specific competences)

7.1. General objective	Acquiring knowledge of soil genesis and soil properties.
7.2. Specific objectives	<p>Acquiring knowledge of factors involved in soil formation and soil genesis</p> <p>To perform analysis of soils in laboratory</p> <p>To be able to analyze the morphological properties of soil and fulfill the soil research sheets on the field.</p> <p>Knowing the soil and environmental factors that influence the quality and productivity of agricultural land.</p>

8. Content

8.1. COURSE	Teaching methods	Observations
<p>Number of hours – 28</p> <p>Definitions and concepts of soil. Brief history of soil science.</p> <p>Soil forming factors. Time. Climate. Parent material. Relief. Ground water and stagnant water. Organisms.</p> <p>Formation and composition of the mineral part of the soil. Origin of the mineral part of soil (mineralogical and petrographic composition of earth). Weathering of rocks. Processes of forming of the mineral part of the soil (mechanical and chemical weathering).</p> <p>Formation and composition of the organic part of the soil. Soil biocenosis. Origin of the organic part of soil and composition. Decomposition of organic residues in the soil. Humification. Humus composition. Types of humus.</p> <p>Soil pedogenesis. Profile differentiation processes: Bioaccumulation. Argilization. Argilloilluviation. Podzolization. Gleyization and stagnogleyization. Salinization and alcalization. Vertic processes. Allofane forming. Soil profile and horizons.</p> <p>Morphological properties of soil.</p> <p>Physical properties of soil. Soil texture. Soil structure. Density. Bulk density. Soil porosity. Physical-mechanical properties.</p> <p>Hydro-physical, aeration and thermal properties of the soil. Soil water (hydro-physical indices, forms of water, soil permeability for water, water regime). Soil air (composition and air regime). Soil temperature (termic properties of soil, termic regime)</p> <p>Chemical properties of soil. Soil colloids. Soil solution. Soil reaction. Soil buffering capacity.</p>	<p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p>	<p>1 lecture</p> <p>2 lectures</p> <p>1 lecture</p> <p>1 lecture</p> <p>2 lectures</p> <p>1 lecture</p> <p>2 lectures</p> <p>2 lectures</p> <p>2 lectures</p>
<p>8.2. PRACTICAL WORK</p> <p>Number of hours – 28</p> <p>Identify and describe the main mineral constituents of the rocks (properties, classification and description)</p> <p>Identification of igneous rocks (genesis, classification, description)</p>	<p>Study of minerals</p> <p>Study of igneous rocks</p>	<p>1 work</p> <p>1 work</p>

classification, description) Identification of metamorphic rocks (genesis, classification, description) Weathering of minerals and rocks (weathering processes and factors). Testing theoretical knowledge using interactive computer quizzes (CD) and practice using samples. Soil sampling in the field and samples processing for laboratory analyses. Determination of hydro-physical coefficients. Determination of density, bulk density, total and aeration porosity. Obtaining the soil dispersion (for texture determination) Separation of soil particles by pipette Determination of soil acidity (pH _{H2O} , pH _{HCl}) Theoretical and practical testing of knowledges	Study of metamorphic rocks Study of weathered rocks Test sampling soil samples processing analyses analyses analyses analyses analyses analyses test	1 work 1 work 1 work 1 work 1 work 1 work 1 work 1 work 1 work 1 work 1 work
8.3. PROJECT		
Number of hours –		
<i>Compulsory Bibliography:</i> 1. LAURA PAULETTE, 2008 – <i>Pedologie</i> , Editura Todesco, Cluj Napoca. 2. LAURA PAULETTE, M. BUTA, 2014 – <i>Pedologie. Analiza solului</i> . Ed. Risoprint, Cluj Napoca. 2. LAURA PAULETTE, 2007 – <i>Pedologie - Studiul solului în teren și laborator</i> , Ed. Todesco, Cluj-Napoca. 3. BLAGA GH., FILIPOV F., LAURA PAULETTE, RUSU I., UDRESCU S., VASILE D., 2008 – <i>Pedologie</i> . Editura Mega Cluj Napoca. 4. Lupașcu Gh., M. Parichi, N. Florea, 1998 – <i>Dicționar de Știința și Ecologia solului</i> . Editura Universității Al. Ioan Cuza, Iași. <i>Optional Bibliography:</i> 5. ICPA, 1986 - <i>Metodologia de elaborare a studiilor pedologice</i> . București. 1. Canarache A., 1990 – <i>Fizica solurilor agricole</i> . Editura Ceres, București. 2. Jenny H, 1941 – <i>Factors in soil formation</i> . McGraw-Hill Book Co., NY		

9. Corroborating the discipline content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field

The content of the discipline is similar to that of the disciplines within the faculties with agricultural profile of the universities of the country and is supplemented annually based on new information published in the field and the debates with farmers, practitioners and specialists of the National Soil Science Society.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percent of the final grade
10.4. Course	Answer to topic extracted Activity in discipline	Oral exam	80%
10.5. Seminar/Laboratory	Results at testing sessions Activity in discipline at practical work	periodic evaluation / colloquy	20%

10.6. Minimum performance standards

Knowledge of scientific information transmitted through lectures and practical work at an acceptable level. Getting the minimum mark (at 5) in laboratory assessments is a graduation requirement for exam.

¹ Cycle of studies - choose one of the three options: Bachelor/Master/Ph.D.

² according to the educational plan

³ Discipline status (compulsoriness) - choose one of the options – **DI** (compulsory discipline) **DO** (optional discipline) **DFac** (facultative discipline).

⁴ One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Filled in on
04.09.2019

Course coordinator
Prof. PhD Laura Paulette

Laboratory work/seminars coordinator
Lecturer PhD Mihai Buta

Approved by the
Department on
05.09.2019

Head of the Department
Assoc. prof. PhD Ovidiu Ranta