

ERASMUS MUNDUS MASTER PROGRAMME IN SOIL SCIENCE – emiSS
2020-2021 ACADEMIC YEAR - MODULE SYLLABUS

Name of course:	
<i>MICROMORPHOLOGICAL AND PHYSICAL METHODS OF SOIL SAMPLING AND ANALYSES</i>	
ECTS	6
Type of Course	<i>Mandatory</i>
Form of Examination	<i>Written Examination</i>
Prerequisites	<i>Basic knowledge of soil science</i>

Field of Study:	
<i>Agriculture,</i>	
Education profile	<i>Academic</i>
Code of study form and level of education	<i>Master of Science</i>
Academic year/Semester	<i>First year/Summer Semester</i>
Specialization	<i>Soil Science</i>
Language of education	<i>English</i>

The lecturer module:	
The name of faculty	<i>University of Agriculture in Krakow, Faculty of Agriculture and Economics</i>
The name of department	<i>Department of Soil Science and Agrophysic</i>

Educational outcomes:	
Description of the learning effect	
KNOWLEDGE - student knows and understands:	
1	<i>Student has knowledge of used micromorphological method in recognising of soil genesis</i>
2	<i>Student has knowledge of used micromorphological method in recognising of soil genesis</i>
3	<i>Student understands the physical phenomena used in soil analysis methods</i>
SKILLS - the graduate can	
1	<i>Student is able to describe the basic features of soil structures in micromorphological thin section</i>
2	<i>Student is able to recognize the main soil-forming minerals and rocks using optical microscopy</i>
	<i>Student can take soil samples and make a physical analysis of soil</i>
SOCIAL COMPETENCES - graduate:	

1	<i>Student understands the need for continuous improvement of qualifications and is able to organize the training of other people</i>
2	<i>Student can work in a group, and takes part in the discussion</i>
	<i>Student uses knowledge and skills to set priorities for efficient operation</i>
	<i>Student understands the need for continuous education in the field of profession</i>

Course objectives and content:

The aim of the course is to study the distribution of soils on the globe and the basis for the most important global soil classifications. The following issues will be discussed: world soil resources and population nutrition, soil classification rules according to the World Reference Base for Soil Resources and Soil Taxonomy, pedogenic factors affecting soil distribution on the globe, soils of individual climate and plant zones on Earth, soil distribution in Europe.

SOIL GEOGRAPHY AND SOIL RESOURCES OF THE WORLD

36 hours

Subject of lecture	1	<i>Definitions and historical review. The main object of study soil micromorphology</i>
	2	<i>Steps of micromorphological analysis</i>
	3	<i>Aspects of thin section studies</i>
	4	<i>Microscopic Techniques for thin section studies</i>
	5	<i>Elements of fabric</i>
	6	<i>Agregates voids and microstructure. Groundmass in soil pictures</i>
	7	<i>Pedofeatures in soil pictures</i>
	8	<i>Midterm exam</i>
	9	<i>Soil sampling rules, standards, methods and tools</i>
	10	<i>Soil physical state</i>
	11	<i>Water hydraulic conductivity coefficient - field and laboratory methods</i>
	12	<i>Stability of soil aggregates</i>
	13	<i>Methods for testing soil compactness. Monitoring of physical properties of soils.</i>
	14	<i>Final exam</i>

The methods of verification and assessment criteria and principles	<i>Written test exam, for passing an examination at least 60% of questions should be answered correctly. The contribution of the evaluation of the lectures in the final grade is 50%.</i>
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Literature:

Recommended Textbooks	1. Interpretation of Micromorphological Features of Soils and Regoliths. 2010. Editors: Georges Stoops Vera Marcelino Florias Mees. Elsevier Science. pp. 752.
	2. Guidelines for Analysis and Description of Soil and Regolith Thin Sections. 2003. George Stoops, M.J. Vepraskas. Soil Science Society of America, pp.184.
	3. Methods of Soil Analysis: Part 4 Physical Methods, SSSA Book Series 5.4, 2002. Published by: Soil Science Society of America, pp. 1692.
Complementary	<i>Publications and materials recommended during classes by teacher</i>

Structure of learning outcomes:



The area of study: agricultural, soil science, environmental science, natural resources **6 ECTS***

The structure of student activity:			
<i>Learning Activities</i>	<i>Amount</i>	<i>Time (h)</i>	<i>Total workload (h)</i>
Participate in lecture	12	3	36
Participate in midterm exam	1	2	2
Individual study for midterm exam	5	3	15
Individual study for lectures	12	1	12
Laboratory study	10	3	30
Quiz			
Field classes	2	12	24
Assignment	11	2	22
Participate in final exam	1	2	2
Individual study for final exam	5	3	15
Literature critical review			
Oral exam			
Individual study for problem solution	11	2	22
Consultations			
Participate in researches			
Mandatory practices and internships			
	Total workload (h)		180

*ECTS Credits = Total Workload (Hours) / 30 (Hours/1 ECTS) = 180 / 30 = 6 ECTS

Name Surname
 of Lecturer :

Sign:.....

Date: