

**ERASMUS MUNDUS MASTER PROGRAMME IN SOIL SCIENCE – emiSS**

**2020-2021 ACADEMIC YEAR - MODULE SYLLABUS**

**Name of course:**

***SOIL ANALYSES TECHNIQUES***

ECTS	6
Type of Course	<i>Elective</i>
Form of Examination	<i>Written Examination</i>
Prerequisites	<i>Basic knowledge in the analytical chemistry and laboratory works.</i>

**Field of Study:**

***Agriculture***

Education profile	<i>Academic</i>
Code of study form and level of education	<i>Master of Science</i>
Academic year/Semester	<i>First year/Fall Semester</i>
Specialization	<i>Agriculture</i>
Language of education	<i>English</i>

**The lecturer module:**

The name of faculty	<i>Ondokuz Mayıs Univ. Faculty of Agriculture</i>
The name of department	<i>Soil Science &amp; Plant Nutrition</i>

**Educational outcomes:**

**Description of the learning effect**

**KNOWLEDGE - student knows and understands:**

1	<i>Student knows the soil physical analyses</i>
2	<i>Student knows the soil chemical analyses</i>
3	<i>Student knows the interpreting soil test results</i>

**SKILLS - the graduate can**

1	<i>Student obtains the necessary scientific information from literature, databases or other sources</i>
2	<i>Student shows the ability to correctly interpret results and draw conclusions on soil analyses.</i>
3	<i>Student has the ability to run soil sampling and analyses individually at laboratory.</i>

**SOCIAL COMPETENCES - graduate:**

1	<i>Student shows activity during a discussion on various issues related to data of soil analyses</i>
2	<i>Student has the competence to participate in agricultural research and discuss their results</i>

**Course objectives and content:**

This course is to acquaint the graduate students with fundamental soil physical and chemical analyses techniques.

Soil sampling, preparation for analyses, soil physical and chemical analyses, interpret the results of analyses.

**Soil Analyses Techniques**

36 hours

Subject of lecture		
1	<i>The aim of soil analysis, sampling from field, garden, plots and soil profiles, homogenization of soil samples to form sub-samples 3 h</i>	
2	<i>Soil physical analyses, soil structure, bulk density, particle density 3 h</i>	
3	<i>Particle size analyses, hydrometer and pipet methods 3 h</i>	
4	<i>Dry sieving, mean weight diameter, aggregate stability, structural stability index, dispersion ratio 3 h</i>	
5	<i>Water holding capacity, field capacity, permanent wilting point 3 h</i>	
6	<i>Soil chemical analyses, soil reaction (pH), salinity (EC) 3 h</i>	
7	<i>Midterm exam</i>	
8	<i>Lime (CaCO<sub>3</sub>) content in soil 3h</i>	
9	<i>Organic carbon content and organic matter in soil 3h</i>	
10	<i>Total nitrogen (N), nitrate (NO<sub>3</sub>) and ammonium (NH<sub>4</sub>) in soil 3 h</i>	
11	<i>Available phosphorus (P) in soil 3 h</i>	
12	<i>Exchangeable cations (Ca, Mg, K, Na) and cation exch. capacity (CEC) 3h</i>	
13	<i>Available micro nutrients (Fe, Cu, Mn, Zn) in soil 3 h</i>	
14	<i>Final exam</i>	
The methods of verification and assessment criteria and principles		<i>For a positive grade, sum of 40% of midterm (100%) and 60% of final (100%) exams should be greater than 60.</i>

**Literature:**

Recommended Textbooks	<ol style="list-style-type: none"> <li>1- Klute, A. (ed.). 1986. <i>Methods of Soil Analysis, Part 1. Physical and Mineralogical Methods. Second Edition.</i> American Society of Agronomy, Madison, WI. IDEM.</li> <li>2- C. Black, C.A. 1965. <i>Methods of soil analysis. Part 2. Chemical and Microbiological Properties. Second Edition.</i> 9(2).ASA, 677 Segoe Rd S, Madison, WI 53711.</li> <li>3- Rowell, D.L. 1996. <i>Soil Science: Methods and Applications.</i> Longman. London.</li> <li>4- Hazelton, P., Murphy, B., 2007. <i>Interpreting Soil Test Results. What do all the numbers mean?</i> CSIRO Publishing Australia.</li> </ol>
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Complementary	<i>Current publications in scientific journals related to course issues and some course materials supported by lecturer.</i>
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**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	12	2	24
Quiz			
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			
	<b>Total workload (h)</b>		<b>150</b>

\*ECTS Credits = Total Workload (Hours) / 25 (Hours/1 ECTS) = 150 / 25 = 6 ECTS

Name Surname  
 of Lecturer : .....

Sign:.....

Date: .....