

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

Name of course:	
<i>MINERAL NUTRITION IN ORGANIC FARMING</i>	
ECTS	6
Type of Course	<i>Compulsory</i>
Form of Examination	<i>Written Examination</i>
Prerequisites	<i>Basic knowledge in the soil science, soil microorganisms, agronomy, crop management.</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/Spring Semester</i>
Specialization	<i>Agriculture</i>
Language of education	<i>English</i>

The lecturer module:	
The name of faculty	<i>Agricultural University Plovdiv BG, Faculty of Agriculture</i>
The name of department	<i>Athrochemistry & Soil Science</i>

Educational outcomes:

Description of the learning effect

KNOWLEDGE - student knows and understands:

1	<i>The subject get student familiar with bases knowledge of organic farming, main principals of production of plant and animal products</i>
2	<i>Student knows how to keep and improve the soil fertility in condition of organic farming</i>
3	<i>Student knows the natural soil processes ensuring mineral nutrition of plants</i>
4	<i>Student knows the types and principles of application of main organic fertilizers, green manuring, cover crops and vermicomposting</i>

SKILLS - the graduate can

1	<i>Student obtains the necessary scientific information from literature, databases or other sources in order to broaden and deepen their knowledge of study topics.</i>
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2	<i>Student has the competence to manage organic farm in way which will keep and improve soil fertility</i>
3	<i>Student will has knowledge of application of basic organic fertilizers on main groups of crops – field crops, vegetables, permanent crops (fruit trees and vineyards)</i>

SOCIAL COMPETENCES - graduate:

1	<i>Student shows activity during a discussion on various issues related to maintaining and improvement of soil fertility in condition of organic farm</i>
2	<i>Student can advise farmers about fertilization of crops in organic crop system</i>
3	

Course objectives and content:

This course is to acquaint the graduate students with concepts of ways of maintaining of soil fertility in conditions of organic farming. Effects of natural proceses influensing of mineral nutrition of plants will be studied, as well as organic fertilizers and teir use. The student will study crop managment prectices leading for impruvment of soil fertility.

Mineral Nutrition in Organic Farming

36 hours

Subject of lecture	1	<i>The main principals of organic production system. Difference between organic and conventional agricultural systems 3 h</i>
	2	<i>Bio-dynamic agriculture and Agro-forestry system 3 h</i>
	3	<i>The living soil. The role of organic matter in soil for plant nutrition. Biological life in soil - simbiotic and non simbiotic relationships 3 h</i>
	4	<i>Earthworms - important factor for the soil fertility. The effect of other soil organisms for the soil fertility 3 h</i>
	5	<i>Nutritional elements for the plant: Nitrogen – circle of nitrogen, nitrogen losses, sources of nitrogen 3 h</i>
	6	<i>Nutritional and energetic fluxes in soil ecosystem. Effect of organic farming on soil erosion 3 h</i>
	7	<i>Midterm exam</i>
	8	<i>Phosphorus – phosphorus losses, sources of phosphorus. Potassium - potassium losses, sources of potassium. Other fertilizers authorized for use in organic farming. 3 h</i>
	9	<i>Organic fertilizers – Composition and types of farmyard manure. Slurry and liquid manures 3 h</i>
	10	<i>Production of compost. Time for application of organic fertilizers 3 h</i>
	11	<i>Green manure and cover crops. Reduced tillage and no-till system 3 h</i>
	12	<i>Crop rotations - Soil sickness and soil fertility, diversity, rotations and polycultures, Biodiversity and organic farming 3 h</i>
	13	<i>Vermicomposting 3 h</i>
	14	<i>Final exam</i>



The methods of verification and assessment criteria and principles	<i>For a positive grade: student should receive at least grade 4 on midterm exam and for final exams score should be greater than 4 (excellent is 6).</i>
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Literature:	
Recommended Textbooks	1. Erksen S., B. Hansen, K. Schmidt, K. Suhr. 2003. Organic farming, Published by Organic Agricultural college at Kaloe, Denmark, 173 p. 2. Lampkin N. 1999. Organic farming, Published by Farming Press Miller Freeman House, 715 p. 3. Plant Growing in Organic Farming. 2017, Konvalina P. (Ed.), JU v C. Budejovicich, 212 p. ISBN: 978-80-7394-670-8 4. Organic Farming, 2006. Radics L., B. Salvatore, P. Correia, S. Doublet, P. Von Fragstein, Z. Szalai (Eds.), 263 p. ISBN: 963 9553 91 3 5. Sarapatka B., J. Urban. 2009. Organic Agriculture, Publisher IAEL, 338 p. 6. Yancheva Ch. I. Manolov, N. Tahsin, A. Kovac, J. Daza, A. Dizdar, N. Zacharoulis, V. Litsiou, A. Enamorado. 2012. Guidelines for Organic Agriculture, 116 p. ISBN: 978-954-8326-57-6
Complementary	<i>Current publications in scientific journals related to course issues and some course materials supported by lecturer.</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 work-load (h)</i>
Participate in lecture	12	3	36
Participate in midterm exam	1	2	2
Individual study for midterm exam	6	3	18
Individual study for lectures	12	1	12
Laboratory study	10	2	20
Quiz			
Assignment	10	2	20
Participate in final exam	1	2	2
Individual study for final exam	6	3	18
Literature critical review			
Oral exam			
Individual study for problem solution	11	2	22
Consultations			



Participate in researches			
Mandatory practices and internships			
	Total workload (h)		150

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

Name Surname
of Lecturer: Ivan Manolov

Sign:.....

Date: 16.01.2020