



Nr.....from.....2019

Form code USAMV 0101010108

COURSE DESCRIPTION

1. General data

1.1. Higher Education Institution	University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca
1.2. Faculty	Agriculture
1.3. Department	Plant culture
1.4. Domain of study	Agronomy
1.5. Level of study ¹⁾	Bachelor
1.6. Specialization/ Program of study	Agriculture
1.7. Form of teaching	IF

2. Characteristics of the course

2.1. Name of the course		AGROECOLOGY						
2.2. Course leader		Professor Ph.D. Aurel MAXIM						
2.3. Coordinator of the laboratory/seminars/projects		Professor Ph.D. Aurel MAXIM						
2.4. Year of study	I	2.5. Semester	II	2.6. Type of evaluation	Continuously	2.7. Course regime	Content ²⁾	DF
							Level of compulsory ³⁾	DI

3. Total estimated time (hours/semester for the teaching activities)

3.1. Number of hours/week- frequency form	3	Of which: 3.2. course	2	3.3. seminar/ laboratory/ project	1
3.4. Total hours in the teaching curricula	42	Of which: 3.5.course	28	3.6.seminar/laboratory	14
Distribution of time					hours
3.4.1. Study based on handbook, notes, bibliography					20
3.4.2. Extra documentation in the library, on specific electronic platforms and on field					20
3.4.3. Prepare the seminars/laboratories/projects, theme, essays, reports, portfolio					20
3.4.4. Tutorial					14
3.4.5. Examination					4
3.4.6. Other activities					
3.7. Total hours of individual study	78				
3.8. Total hours on semester	120				
3.9. Number of ECTS ⁴⁾	4				

4. Pre-conditions (where is the case)

4.1. of curriculum	Botany, Biophysics, Agrometeorology
4.2. of competent	

5. Conditions (where is the case)

5.1. of course development	The course is interactive, students can ask questions regarding the content of the statement. Academic discipline enforces time to start and end of the course. Are not allowed any other activities during the lecture, mobile phones are closed.
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5.2. of seminar/laboratory/project development	At practical work the consultation of the practical mentor is mandatory, each student will develop an individual activity with laboratory material made available and described in the guide for practical work. Academic discipline is imposed throughout the tutorial.
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6. Specific competencies gained

Professional competencies	<p>To know the specific language discipline of Agroecology. To understand the functioning of biological systems. To know the main abiotic and biotic environmental factors and their role in ecosystem functioning. To understand the structure and functions of ecosystems. To know the characteristics and functioning of agroecosystems. To be able to describe the main farming systems. To understand the impact of human activities on air, water, and soil and the main remedial measures.</p>
Transversal competencies	<p>Autonomy and assuming responsibility. Application of efficient work techniques in multidisciplinary team. Personal development and management of time and activities to carry out work tasks during courses and practical work.</p>

7. Subject Objectives (as a result of the specific competencies gained)

7.1. Subject general objective	To acquire knowledge regarding agroecosystems.
7.2. Specific objective	<p>To know the characteristics of abiotic factors and their influence on the biotic component of the ecosystem. To acquire indexes that characterize the population and biocenosis. To know the structure and functions of ecosystems. To know the characteristics of the agroecosystems. To acquire the characteristics of agriculture systems. To be aware of the damage and environmental protection problems.</p>

8. Content

8.1. COURSE	Methods of teaching	Observations
Number of hours – 28		
Chapter 1. PURPOSE AND HISTORY OF ECOLOGY	Lecture	1 lecture
Chapter 2. BIOLOGICAL SYSTEMS		
Chapter 3. ENVIRONMENTAL FACTORS	Lecture	2 lectures
3.1. Abiotic factors		
3.2. Biotic factors		
Chapter 4. STRUCTURE OF THE ECOSYSTEMS		
4.1. Spatial structure of the ecosystems		
4.2. Trophic structure of the ecosystem		
4.3. Biochemical structure of the ecosystems		
4.4. Temporal structure of the ecosystems		
Chapter 5. ECOSYSTEM FUNCTIONS		
5.1. Energy function of ecosystems		
5.2. The movement function in ecosystems		
5.3. Self-regulating function		
Chapter 6. GENERAL TERMS OF AGROECOSYSTEMS	Lecture	2 lectures
6.1. Definition, importance, and historical		
6.2. Origin and evolution of agricultural systems		
6.3. Characteristics of farming systems		
Chapter 7. CLASSIFICATION OF POWER	Lecture	3 lectures



<p>ENGINEERING IN AGROECOSYSTEMS 7.1 . Extensive agroecosystems 7.2. Intensive agroecosystems 7.3. Industrialized agroecosystems Chapter 8. AGROECOSYSTEMS AND THE NOURISHMENT OF MANKIND Chapter 9. FARMING SYSTEMS 9.1. Traditional farming systems 9.2. Modern agriculture systems 9.2.1. Industrialized agriculture systems 9.2.2. Sustainable agriculture systems Chapter 10. ENVIRONMENTAL PROTECTION IN AGRICULTURE –THE NATIONAL PLAN FOR RURAL DEVELOPMENT 2014-2020 Chapter 11. ENVIRONMENTAL DAMAGE AND PROTECTION 11.1. Definition and classification of pollution 11.2. Air pollution 11.3. Water pollution 11.4. Soil pollution 11.5. Agricultural diversity conservation 11.6. The risks of genetically modified organisms</p>	<p>Lecture Lecture Lecture Lecture</p>	<p>1 lecture 3 lectures 1 lecture 1 lecture</p>
<p>8.2.PRACTICAL WORK Number of hours – 14 Adaptations of organisms to the limited action of abiotic factors – activity in the field Methodologies used in ecology studies of soil - the determination in the field of some physical and chemical parameters of soil - a sampling of soil in order to study microfauna and microflora – activity in the field - estimation of micro-organisms through the most probable number method - the separation of microarthropods by using Berlese-Tullgren method Studying the effects of farming practices on the soil breath by measuring this parameter <i>on site</i> using closed chamber method Monitoring the assimilation capacity of plants using portable system CIRAS 2. The influence of natural and anthropogenic factors Monitoring key indicators of water quality Verification of knowledge</p>	<p>Fieldwork Laboratory activity Laboratory activity Laboratory activity Laboratory activity and fieldwork</p>	<p>1 laboratory session 2 laboratory sessions 1 laboratory session 1 laboratory session 1 laboratory session</p>
<p>Compulsory bibliography: 1. Fițiu A., <i>Ecologie și Protecția Mediului</i>, Ed. Academicpres, 2002 2. Maxim, A., <i>Ecologie generală și aplicată</i>, Editura Risoprint Cluj-Napoca, 2008 3. Maxim, A. – <i>coordonator, Agrobiodiversitate și bioconservare</i>. Editura Risoprint Cluj-Napoca, 2010 4. Puia, I., Soran, V., Rotar, I., <i>Agroecologie, ecologism, ecologizare</i>. Editura Genesis, Cluj-Napoca, 1998 5. Șandor, M., Maxim, A., <i>Ecologie. Lucrări practice</i>. Editura AcademicPres, Cluj-Napoca, 2009</p>		
<p>Facultative bibliography: 1. Jarvis, D.I., Padoch, C., Cooper, H.D., <i>Managing Biodiversity in Agricultural Ecosystems</i>. Columbia University Press, New York, 2007 2. Kontoleon, A., Pascual, U., Smale, M., <i>Agrobiodiversity Conservation and Economic Development</i>, Routledge, London and New York, 2005.</p>		



3. Toncea I., Ghid practic de agricultură ecologică. Ed. Academicpres, 2002

9. Corroboration of the subject content with the expectations of the epistemic communities representatives, of the professional associations and representatives employers in the domain

In order to identify ways of modernization and continuous improvement of teaching and course content with the current issues and practical problems, teachers and students participate in an annual environmental symposium of University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca where are debated current agroecology and environmental protection issues.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation methods	10.3. Percent of the final grade
10.4. Course	Biological systems Biotic and abiotic ecological factors Structure and functions of ecosystems Special features of agricultural ecosystems Classification of power engineering in agroecosystems Farming systems Environmental damage and protection	Oral exam	70%
10.5. Seminar/Laboratory	Methodologies used in ecology studies of soil Studying the effects of farming practices on the soil breath and the assimilation capacity of plants Monitoring key indicators of water quality	Verification of knowledge (4)	30%
10.6. Minimal standard of performance			
Mastering scientific information provided during lectures and practical work at an acceptable level. Obtaining the pass mark in continuous assessment is a graduation requirement.			

¹ Level of study – to be chosen one of the following – Bachelor /Post graduate/Doctoral

² Course regime (content) – for bachelor level it will be chosen one of the following – DF (fundamental subject), DD (subject in the domain), DS (specific subject), DC (complementary subject).

³ Course regime (compulsory level) – to be chosen one of the following – DI (compulsory subject) DO (Optional subject) DFAC (Facultative subject).

⁴ One ECTS is equivalent with 25-30 de hours of study (didactical and individual study).

Date of filling,
4/9/2019

Course coordinator
Professor Ph.D. Aurel MAXIM

Leader of the laboratory/seminars
Senior lecturer Ph.D. Mignon ȘANDOR

Date of Department's
approval,
5/9/2019

Department manager
Professor Ph.D. Marcel DUDA