UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
Facultatea de Agricultură
Calea Mănăştur 3-5, 400372, Cluj-Napoca, România
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No._____of_____2019 **UASMV form 0107020107**

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	Environmental and Plant Protection
1.4. Field of study	Environmental Engineering
1.5. Cycle of study1	Bachelor
1.6. Specialization/ Study programme	Environmental Engineering
1.7. Form of education	Full time

2. Information on the discipline

2.1. Discipline name	**NATURAL RESOURCES**							
2.2. Course coordinator				Professor Ph.D. Aurel MAXIM				
2.3. Seminar/ laboratory/ project coordinator				Professor Ph.D. Aurel MAXIM				
2.4. Year of study	II	2.5. Semester	II	2.6. Evaluation type	continuous	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. lecture**	2	**3.3. seminar/ laboratory/ project**	2
3.4.Total number of hours in the curriculum	56	**out of which: 3.5. lecture**	28	**3.6.seminar/laboratory**	28
Distribution of the time allotted					hours
3.4.1. Study based on books, textbooks, bibliography and notes					10
3.4.2. Additional documentation in the library, electronic platforms and field experiences					10
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					5
3.4.4. Tutorials					5
3.4.5. Examinations					4
3.4.6. Other activities					
3.7. Total hours of individual study	34				
3.8. Total hours per semester	90				
3.9. Number of credits4	3				

4. Prerequisites (if applicable)

4.1. curriculum-related	Botany, Zoology, General Ecology I
4.2. skills-related	The student should have knowledge about environmental factors and ecosystem structure

5. Conditions (if applicable)

5.1. for the course	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.
5.2. for the seminar/laboratory/project	Practical work is compulsory consultation practically mentor, each student will conduct a single laboratory material available and described in the guide for practical work. Academic discipline is imposed throughout the tutorial.

6. Cumulated specific competences

Professional competencies	To know the specific language discipline of Natural Resources. To know the types of biological diversity. To appropriate structural elements of the primary factors influencing biodiversity and biodiversity. Understand and know the value of biodiversity. To master the problems related to threats of biological diversity. To know the methods of *on-site* and *off-site* conservation of biodiversity. To acquire agrobiodiversity issues and conservation of plant and animal genetic resources. Know the risks of GMOs to human health and the environment.
Transversal competencies	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.

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

7.1. General objective	To acquire the knowledge about natural resources and their management.
7.2. Specific objective s	To know the definition and classification of natural resources, natural capital of Romania, types of biological diversity, structural elements and factors of influence of biodiversity, threats to biological diversity, conservation of biodiversity, notions of agrobiodiversity and conservation of plant and animal genetic resources and risks of genetically modified organisms on biodiversity.

8. Content

8.1. COURSE **Number of hours – 28**	Teaching methods	Observation
Chapter 1 DEFINITION AND CLASSIFICATION OF NATURAL RESOURCES	Lectures	1 lecture
Chapter 2 THE MATERIAL AND ENERGY RESOURCES OF THE PLANET 2.1 Material resources 2.1.1 Composition of natural resources. geospheres 2.1.2 The material resources of the Earth 2.2 Energy resources 2.2.1 Fossil fuels 2.2.2 Solar energy 2.2.3 Biofuel 2.2.4 Wave and tidal energy 2.2.5 Ocean thermal energy 2.2.6 Geothermal energy 2.2.7 Hydraulic energy 2.2.8 Wind power.	Lectures	3 lectures
Chapter 3 NATURAL CAPITAL OF ROMANIA 3.1 The relief 3.2 Water resources 3.3 Climate 3.4 Land fund 3.5 Non-renewable resources 3.6 The ecological structure of the natural capital. 3.7 Biodiversity 3.8 The impact of anthropic activities on natural capital	Lectures	1 lecture
Chapter 4 BIODIVERSITY AND CONSERVATION OF BIODIVERSITY 4.1 General problems regarding biodiversity	Lectures	5 lectures

4.2 Types of biological diversity 4.3 Structural elements and factors of influence of biodiversity 4.4 Ecological economics and biodiversity values 4.5 Species extinction and threats to biological diversity 4.6 Conservation of biological diversity 4.7 Plant and animal genetic resources 4.8 Genetically modified organisms and biodiversity Chapter 5 THE NATURAL RESOURCE CRISIS 5.1 General considerations 5.2 Environmental issues 5.2.1 Developmental gaps 5.2.2 The environment of natural resources 5.2.3 Urban and technological environment 5.3 World consumption of natural resources	Lectures	4 lectures

8.2. PRACTICAL WORK **Number of hours – 28**		
Establishing the database on climate control, air and noise pollution planning and planning	Debate, brainstorming, case study, application interviews	Two laboratory sessions
Elements of forest management. Monitoring and evaluation	Debate, brainstorming, case study, application interviews	Two laboratory sessions
Presentation of protected areas (Case study)	Fieldwork	One laboratory session
Collecting biodiversity by various methods	Laboratory activity	One laboratory session
Data preparation in genetic conservation activities	Laboratory activity	One laboratory session
Data handling processes in genetic conservation activities		
Methods of recognizing intraspecific biodiversity	Laboratory activity	One laboratory session
The richness and biodiversity indices	Laboratory activity	One laboratory session
Structure of passport descriptors used in genebanks	Fieldwork	One laboratory session
Sampling for conservation in gene banks	Laboratory activity	One laboratory session
Testing of seed viability during storage in genebanks	Laboratory activity	One laboratory session
Verification of knowledge	Laboratory activity	One laboratory session
	Laboratory activity	One laboratory session

Compulsory bibliography:

1. *Băgăcean, D. şi Dan, V., Resurse naturale. Editura U.T. Press, Cluj-Napoca, 2013*
2. *Berca M., Planificarea de mediu şi gestiunea resurselor naturale. Editura Ceres, Bucureşti, 2006*
3. *Cristea, V., Denaeyer, S., De la biodiversitate la OGM-uri. Editura Eikon, Cluj-Napoca, 2004*
3. *Ghidra, V., Botu, M., Sestraş, R., Botu, I., Biodiversitate şi bioconservare. Editura AcademicPres, Cluj-Napoca, 2004*
4. *Maxim, A. – coordonator, Agrobiodiversitate şi bioconservare. Editura Risoprint Cluj-Napoca, 2010*
5. *Primack, B., Pătroescu, M., Rozylowicz, Iojă, C., Conservarea diversităţii biologice. Editura Tehnică, Bucureşti, 2002*

Optional bibliography:

1. *Jarvis, D.I., Padoch, C., Cooper, H.D., Managing Biodiversity in Agricultural Ecosystems. Columbia University Press, New York, 2007*
2. *Jeffries, M., Biodiversity and Conservation. Routledge, London and New York, 2005*
3. *Kontoleon, A., Pascual, U., Smale, M., Agrobiodiversity Conservation and Economic Development, Routledge, London and New York, 2005*

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

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 in collaboration with the Environmental Protection Agency Cluj where are discussed current issues of biodiversity conservation.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percentage of the final grade
10.4. Course	Classification of natural resources The natural capital of Romania Types of biological diversity and the value of biodiversity Threats to biological diversity In situ and ex situ conservation of biodiversity Conservation of agrobiodiversity Risks of genetically modified organisms for biodiversity The crisis of natural resources	Oral exam	70%
10.5. Seminar/Laboratory	Control and planning of climate, air and noise pollution Elements of forest management. Monitoring and evaluation Biodiversity collection through various methods and data preparation in the genetic conservation activity Collecting local varieties, identifying them, obtaining seed and preserving them in gene banks Methods of highlighting the intraspecific and interspecific biodiversity of biodiversity	Verification of knowledge (4)	30%
10.6. Minimum performance standards 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 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
4/9/2019

Course coordinator
Professor Ph.D. Aurel MAXIM

Laboratory work/seminar coordinator
Professor Ph.D. Aurel MAXIM

Approved by the department on
5/9/2019

Head of the Department
Professor Ph.D. Ioan OROIAN