



UNIVERSITATEA DE ȘTIINȚE AGRICOLE ȘI MEDICINĂ VETERINARĂ CLUJ-NAPOCA

Facultatea de Agricultură

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Nr. \_\_\_\_\_ from \_\_\_\_\_

Form USAMV 0107020108

## DISCIPLINE FILE

### 1. Program data

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca
1.2. Faculty	Agriculture
1.3. Department	Environmental and plant protection
1.4. Field of studies	Environmental Engineering
1.5. Cycle of studies <sup>1)</sup>	License
1.6. Specialization / Study program	Environmental Engineering
1.7. Form of education	IF

### 2. Data Discipline

2.1. Name of the discipline	Ecological management							
2.2. Holder of course activities	PhD.Lecturer Petru BURDUHOS							
2.3. Holder of seminar / laboratory / project activities	PhD.Lecturer Petru BURDUHOS							
2.4. Year of studies	II	2.5. Semester	2	2.6. Type of evaluation	Sumative	2.7. The discipline regime	Content <sup>2</sup>	DD
							Obligatory <sup>3</sup>	DI

### 3. Estimated total time (hours per semester of teaching activities)

3.1. Number of hours per week - frequency form	4	from which: 3.2. curs	2	3.3. seminar / laboratory / project	2
3.4. Total hours of the curriculum	56	from which: 3.5.curs	28	3.6. seminar / laboratory	28
<b>Distribution of the time fund</b>					<b>h</b>
3.4.1. Study by handbook, course support, bibliography and notes					10
3.4.2. Additional documentation in the library, on specialized electronic platforms and in the field					4
3.4.3. Preparation of seminars / laboratories / projects, topics, reports, portfolios and essays					4
3.4.4. Tutorials					2
3.4.5. Examinations					2
3.4.6. Other activities					
3.7. Total hours of individual study	22				
3.8. Total hours per semester	78				
3.9. Number of credits <sup>4</sup>	3				

### 4. Preconditions (where applicable)

4.1. of curriculum	General Ecology, Agrometeorology, Computer Science
4.2. of skills	-

### 5. Conditions (where applicable)

5.1. course development	Room equipped with computer and video projector. The university discipline requires the observance of the starting and finishing time of the course. No other activities are tolerated during the lecture, the cell phones being closed.
5.2. for conducting the seminar / laboratory / project	Room equipped with computer and video projector At the practical works it is compulsory to consult the bibliographic materials made available to the students. Each student will carry out individual activities proposed on the basis of the laboratory theme. Academic discipline is required for the entire duration of the work.

### 6. Specific skills acquired

Professional skills	To know the major problems affecting the balance of ecosystems Understand the factors that influence ecosystem stability and productivity To know the principles and methods of ecological management for the main types of ecosystems To be able to offer appropriate management solutions for imbalances in ecosystems To know the main indicators that characterize the health of the ecosystems
Transversal competences	Understand correctly the application of ecological management Demonstrate the ability to characterize the imbalances in ecosystems To be able to correctly convey the problem of ecological management To be able to offer adequate solutions to imbalances in the main types of ecosystems To know the principles of implementation of environmental management systems

### 7. The objectives of the discipline (based on the grid of specific skills acquired)

7.1. The general objective of the discipline	To learn the principles and methods underlying the ecological management
7.2. Specific objectives	To know the factors that affect the ecological balance To learn the indicators that characterize the health of an ecosystem To be able to offer pertinent solutions to the imbalances in the natural and anthropic ecosystems

### 8. Contents

8.1. COURSE	Teaching methods	Remarks
<b>Number of hours – 28</b> <b>Ecological management is an integral part of the concept of sustainable development</b> The causes, manifestations and consequences of the ecological crisis. Concepts and theories regarding ecological and environmental management. Ecological trends and environmental policies. Legislative aspects in ecological management. Globalization of ecological issues.	Lecture	4 hours
<b>Ecosystem as a complex ecological system</b> Ecosystem balance and stability. Factors that influence the productive potential of ecosystems. The capacity to support ecosystems. Goods and services offered by ecosystems.	Lecture	4 hours

<p>Consequences of the anthropogenic impact on ecosystems. The concept of ecosystem health. Biological indicators used in the assessment of ecosystem health .</p> <p><b>Forest ecosystem management</b>  Forest production and productivity. Consequences of overexploitation of the forest. Management of invasive species in forests. Disease and pest control in forest ecosystems. Sustainable management of forest ecosystems. The role of the forest in balancing the human - biosphere relationship. Management measures for the restoration and protection of forests.</p> <p><b>Management of grassland ecosystems</b>  Grass production and productivity. Classification of grassland ecosystems and their dynamic balance. Over-exploitation of grassland. Management of invasive species in meadows. Sustainable exploitation of grasslands. Ecological management measures and protection of grassland ecosystems.</p> <p><b>Management of slow aquatic ecosystems.</b>  Production and productivity of slow aquatic ecosystems. Effects of anthropic activities on slow ecosystems. Rehabilitation of slow ecosystems and their protection.</p> <p><b>Management of lotic aquatic ecosystems</b>  Production and productivity of lotic aquatic ecosystems. Effects of anthropic activities on lotic ecosystems. Works on the rehabilitation of the slow aquatic ecosystems and their protection.</p> <p><b>Wetland management</b>  The role and importance of wetlands. Effects of anthropogenic activity on wetlands. Wetland protection.</p> <p><b>Agroecosystems management.</b>  The role and importance of agro-ecosystems for humanity. Impact of agricultural practices on soil quality. Impact of agricultural practices on water quality. Impact of agricultural practices on air quality. Impact of agricultural practices on biodiversity. The impact of agricultural practices on climate change. Policies for "greening" of agriculture adopted at global and European level. New agricultural management practices favorable to the balance and stability of agroecosystems.</p> <p><b>Management of urban ecosystems</b>  Energy and productive characteristics of the urban ecosystem. Sustainable city management. Management of the city's natural resources. Ecological management practices in the urban ecosystem.</p>	<p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p> <p>Lecture</p>	<p>4 hours</p> <p>2 hours</p> <p>2 hours</p> <p>2 hours</p> <p>2 hours</p> <p>4 hours</p> <p>4 hours</p>
<p><b>8.2. PRACTICAL WORK</b>  <b>Number of hours – 28</b>  Analysis of the main parameters that influence the stability status of an ecosystem</p>	<p>Laboratory activity</p>	<p>2 hours</p>

Indicators used to evaluate the balance of a forest ecosystem: case study on a forest ecosystem affected by illegal logging.	Field and laboratory activity	4 hours
Indicators used to evaluate the balance of a grassland ecosystem: a case study of an overgrown mountain meadow	Field and laboratory activity	4 hours
Indicators used to evaluate the balance of a lotic ecosystem: a case study on the effects of the construction of a micro-hydroelectric power station on the upper course of a river	Field and laboratory activity	4 hours
Ecological indicators used in water quality assessment: the extended biotic index, the biotic index of diatoms	Laboratory activity	2 hours
Indicators of the balance of an agroecosystem: case study on the effects of a cereal farm and a zootechnical farm on soil, water and air quality	Field and laboratory activity	4 hours
Indicators of the quality of habitats in an agro-ecosystem	Laboratory activity	2 hours
Methods for implementing the ISO 14001: 1996 environmental standard	Laboratory activity	4 hours
Verification of knowledge	Final test	2 hours

**Required bibliography:**

1. Șandor M., *Management ecologic*. Course notes. 2014.
1. Botnariuc N., Vădineanu A, *Ecologie*, Ed. Did. și Ped., București, 1982
- 2.A. Vădineanu, *Dezvoltarea durabilă*, Ed. Universității din București, 1998
3. Șandor M., *Ecologie aplicată. Metode și principii*. Editura Digital Data Cluj, 2012
- 4.R. Therivel, M.R. Partidario, *The Practice of Strategic Environmental Assessment*, Earthscan Publications, 1996

**Optional bibliography:**

3. Maxim, A., *Ecologie generală și aplicată*, Editura Risoprint Cluj-Napoca, 2008
2. Jorgensen, S. E., *Integration of Ecosystem Theories: A Pattern*, Kluwer Academic Publishers, 1992
3. *Agriculture and Biodiversity: Developing indicators for policy analysis*, Proceedings from an OECD Expert Meeting

**9. Corroborating the contents of the discipline with the expectations of the representatives of the epistemic communities, professional associations and representative employers in the field related to the program**

In order to identify ways of modernizing and continuously improving the teaching and the content of the courses, with the most current topics and practical problems, the teachers and students participate in the annual environmental symposium of USAMV Cluj-Napoca in collaboration with Romanian Waters and the Protection Agency Cluj environment where current issues of environmental protection are debated.

**10. Evaluation**

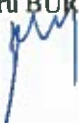
Activity type	10.1. Evaluation criterias	10.2. Methods of evaluation	10.3 Weight in the final grade
10.4. Course	Ecosystem stability and balance	Exam	70%

	Methods and principles of ecological management		
10.5. Seminar / Laboratory	Indicators used in ecosystem health assessment The environmental management system	There are 4 checks ongoing	30%
<b>10.6. Minimum standard of performance</b>			
Mastery of scientific information transmitted through lectures and practical papers at an acceptable level. Obtaining the pass mark for the ongoing checks is a condition of promotability.			

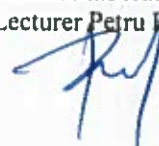
- <sup>1</sup> The cycle of studies - one of the variants is chosen - Bachelor / Master / Doctorate
- <sup>2</sup> Discipline regime (content) - one of the variants is chosen for the degree level - DF (fundamental discipline), DD (discipline in the field), DS (specialty discipline), DC (complementary discipline).
- <sup>3</sup> The regime of the discipline (compulsory) - one of the variants is chosen - DE (compulsory discipline) DO (optional discipline) DFac (optional discipline).
- <sup>4</sup> A credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Date completed  
04.09.2019

Course holder  
PhD.Lecturer Petru BURDUHOS



Holder of laboratory works  
PhD.Lecturer Petru BURDUHOS



Date of approval in the  
department  
05.09.2019

Department director  
Ph.D.Professors Ioan OROIAN

