



No. \_\_\_\_\_ of \_\_\_\_\_

USAMV form 0107020105

## SUBJECT OUTLINE

## 1. General data

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. Domain of study	Environment engineering
1.5. level of study <sup>1)</sup>	Bachelor
1.6. Specialization/ Program of study	Environment engineering
1.7. Form of teaching	Full time

## 2. Characteristics of the course

2.1. Name of the course	Elements of biology and microbiology							
2.2. Course coordinator	Lect. dr. Vlad Stoian							
2.3. Coordinator of the laboratory/seminars activity	Lect. dr. Vlad Stoian							
2.4. Year of study	I	2.5. Semester	II	2.6. Type of Evaluation	Continuously	2.7. Course regime	Content <sup>2</sup>	DF
							Compulsoriness <sup>3</sup>	DI

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

3.1. Number of hours/week-frequency form	4	of which: 3.2. course	2	3.3. seminar/ laboratory/ project	2
3.4. Total hours in the teaching curricula	56	Of which: 3.5. course	28	3.6. seminar/laboratory	28
Distribution of time					hours
Distribution of the time allotted					15
3.4.1. Study based on books, textbooks, bibliography and notes					15
3.4.2. Additional documentation in the library, electronic platforms and field experiences					15
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					6
3.4.4. Tutorials					8
3.4.5. Examinations					
3.4.6. Other activities	59				
3.7. Total hours of individual study	115				
3.8. Total hours per semester	4				

## 4. Prerequisites (if applicable)

4.1. curriculum-related	Physiology, Biochemistry, Genetics, Pedology, Agrochemistry
4.2. skills-related	The student should have knowledge concerning the metabolic processes, intracellular chemical processes, soil as living environment and changes in soil nutrients.

## 5. Conditions (if applicable)

5.1. for the course	The course is interactive, students can ask questions regarding the content of the exposure. Academic discipline require compliance Time start and end of the course. Will not be tolerated any other activities during the lecture and mobile phones
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<b>Elements of microbial ecology</b>	Lecture	1 lecture
<b>Positive microbial interaction</b>	Lecture	1 lecture
<b>Negative microbial interaction</b>	Lecture	1 lecture
<b>Influence of phytopharmaceutics over microorganism</b>	Lecture	1 lecture
<b>Microbial bioremediation of degraded and contaminated sites with heavy metals, pesticides and petroluem.</b>	Lecture	1 lecture
<b>Air and water microbiology.</b>	Lecture	1 lecture
<b>Biomonitoring of disturbed ecosystems.</b>	Lecture	1 lecture

<b>8.2.PRACTICAL WORK</b>		
<b>Number of hours – 28</b>		
Organization of a microbiology laboratory. Materials and laboratory equipment. Safety rules in the laboratory of microbiology.	Theoretical and practical work	2 laboratory work
Apparatus for study in microbiology. Magnifying glass, microscope, electron microscope.	Theoretical and practical work	2 laboratory work
General microbiological techniques. Sterilization. Methods of sterilization in microbiology.	Theoretical and practical work	1 laboratory work
Preparation of culture media for microorganisms.	Practical work	2 laboratory work
Inoculation techniques for microorganisms. Inoculation with Pasteur pipette, with inoculation loop, by prodding, inoculation in Petri dishes.	Practical work	1 laboratory work
Conduct of the microscopic examination. Examining morphological and tinctorial characters of microorganisms. Technical execution of a smears. Examination of the native preparations, vital staining, simple staining. Gram staining.	Practical work	2 laboratory work
Water microbiology. Methods of water quality analysis.	Practical work	2 laboratory work
Microbial indicators in biomonitoring processes	Practical work	2 laboratory work

**Compulsoru bibliography::**

1. VIDICAN ROXANA, (2005) –*Notite de curs*
2. PAMFIL DORU (1999) –*Microbiologie*
3. PAMFIL DORU, HENEGARIU OCTAVIAN (1996) – *Microbiologie generala*

**Facultative bibliography:**

1. Dragan –Bularda O. (2000) - *Microbiologie*

**9. Corroboration of the subject content with teh expectations of the epistemic communities' representatives,of the proffesional 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 the teachers participate in symposiums organized by University of Agricultural Sciences and Veterinary Medicine in the country, Symposiums in areas of interest organized by universities in the country and abroad, the annual meeting of the Romanian Society of Grassland and other Societies working in areas of interest where they meet with farmers being discussed current and future aspects of the dynamics of Microbiology in Romania and Europe

- 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 teh 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).

Filled in on  
04.09.2019

Course coordinator  
Lect. dr. Vlad Stoian

Laboratory work/seminar coordinator  
Lect. dr. Vlad Stoian

Approved by the  
department on  
05.092019

Department manager  
Prof. dr. Marcel Duđa