

## SUBJECT DESCRIPTION

### 1. Information on the study programme

1.1 The institution of higher education	UNIVERSITY OF ORADEA
1.2 Faculty	FACULTY OF ENVIRONMENTAL PROTECTION
1.3 Department	FOOD PRODUCT ENGINEERING
1.4 Field of study	FOOD PRODUCT ENGINEERING
1.5 Cycle of study	BACHELOR
1.6 Program of study/Qualification	PROCESSING TECHNOLOGY OF AGRICULTURAL PRODUCTS / ENGINEER

### 2. Information on the discipline

2.1 Name of discipline				ECOLOGY AND ENVIRONMENTAL PROTECTION I				
2.2 Course holder				LECTURER PhD LUCIAN BARA				
2.3 Seminar/Laboratory/Project holder				LECTURER PhD LUCIAN BARA				
2.4 Year of study	2	2.5 Semester	III	2.6 Type of evaluation	EX	2.7 Regimen of the subject	C	

(C) Compulsory; (O) Optional; (E) Elective

### 3. Total estimate time (hours per semester of didactic activities)

3.1 Number of hours per week	4	out of which: 3.2 course	2	out of which 3.3 laboratory	2
3.4 Total hours from the curriculum	56	Of which: 3.5 course	28	out of which 3.6 laboratory	28
Time allotment					69
Study assisted by manual, course support, bibliography and notes					20
Additional documentation in the library/ on specialised electronic platforms and in the field					20
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					20
Tutorship					7
Examinations					2
Other activities.....					
3.7 Total hours of individual study	69				
3.9 Total hours per semester	125				
3.10 Number of credits	5				

### 4. Prerequisites (where appropriate)

4.1 curriculum	Knowledge of Organic Chemistry, Biochemistry, Cell Biology, Microbiology.
4.2 competences	Manipulation of biological samples in safe conditions for the user.

### 5. Conditions (where appropriate)

5.1. related to course	The course room equipped with video projector; internet connection.
5.2. related to laboratory	Laboratory equipment: optical microscope, sample homogenizer, pH meter, UV lamp, related equipment (autoclave machine, oven, laminar flux), specific utensils (inoculation loops, pipettes).

### 6. Specific competences acquired

<b>Professional competences</b>	<p>C1. Explaining the mechanisms, processes and effects of anthropogenic or natural origin that determine and influence environmental pollution</p> <p>C3. Analysis of the technical solutions necessary for the prevention, reduction and elimination of negative phenomena on the environment</p> <p>C4. The use of legal norms and the best available technologies to prevent and reduce the impact of natural and anthropogenic phenomena on the environment</p> <p>C6. Coordination of technological activities and processes based on technical specifications</p>
<b>Transversal competence</b>	<p>CT1. Identifying and complying with the rules of professional ethics and deontology, assuming responsibility for the decisions made and related risks.</p> <p>CT2. Identifying roles and responsibilities in a multidisciplinary team and applying communication techniques and effective team work</p>

## 7. Objectives of discipline (coming from the specific competences acquired)

<b>7.1 General objective</b>	At the scientific level, the study of ecology and environmental protection is one of the most complex and challenging fields. Our program emphasizes interdisciplinary training and collaborative research using cutting-edge technologies. The students will be exposed to a diverse set of research tools from the fields of ecology, conservation, marine biology, environmental physiology, neurobiology, animal behavior, phylogenesis, and evolution.
<b>7.2 Specific objectives</b>	The Ecology and Environmental Protection track offers the opportunity for students to work both in the laboratory and in the field. The Ecology and Environmental Protection Track is designed to educate and train students for independent careers in research, as well as in nature and environmental conservation organizations, in government ministries, and in industry.

## 8. Contents\*

8.1 Course	Methods of teaching	No. of hours
1. Definition, object of ecology, stages of evolution of ecology, subdivisions of ecology	Interactive conversation; video presentation; oral exposure.	2
2. Systematic organization of living matter	Interactive conversation; video presentation; oral exposure.	2
3. Organisms and the living environment	Interactive conversation; video presentation; oral exposure.	2
4. Biotope - abiotic environment of living things	Interactive conversation; video presentation; oral exposure.	2
5. Biocenosis - structure, interspecific relations, subdivisions of biocenosis	Interactive conversation; video presentation; oral exposure.	2
6. Structural indices of biocenoses	Interactive conversation; video presentation; oral exposure.	2
7. The ecological niche	Interactive conversation; video presentation; oral exposure.	2
8. The biogeochemical cycle of carbon, nitrogen.	Interactive conversation; video presentation; oral exposure.	2

9. The biogeochemical cycle of phosphorus, calcium and sulphur.	Interactive conversation; video presentation; oral exposure.	2
10. The ecosystem, the spatial structure of ecosystems, the energetics of ecosystems.	Interactive conversation; video presentation; oral exposure.	2
11. Ecological succession	Interactive conversation; video presentation; oral exposure.	2
12. Aquatic ecosystems	Interactive conversation; video presentation; oral exposure.	2
13. Associations of aquatic organisms	Interactive conversation; video presentation; oral exposure.	2
14. Natural terrestrial ecosystems in Romania	Interactive conversation; video presentation; oral exposure.	2

### **Bibliography**

1. Antonescu C. S., 1963 – *Biologia apelor*, Editura Didactică și Pedagogică București.
2. Ardelean A., Maior C., 1998 – *Ecologie socială și juridică*, Editura SERVO-SAT, Arad.
3. Ardelean Florinela, Iordache Vlad, 2007 – *Ecologie și protecția mediului*. Editura Matrix ROM, București.
4. Berca Mihai, 2000 – *Ecologie generală și protecția mediului*. Editura Ceres, București.
5. Gavrilaș Angela., Doliș M., 2006 – *Ecologie și protecția mediului*, Ed. Alfa Iași
6. Gavrilescu Elena, Olteanu I., 2003 – *Calitatea mediului (II)*. Monitorizarea calității apei, Editura Universitaria, Craiova.
7. Muntean L.S. și colab, 2007, *Tratat de plante medicinale cultivate și spontane*, Editura Risoprint Cluj-Napoca.
8. Munteanu C, Dumitrașcu M, Iliuță R-A (2011). *Ecologie și protecția calității mediului*. Ed. Balneară, București
9. Pricope F., Pricope LAURA, 2004 - *Poluarea mediului și conservarea naturii*, Editura Alma Mater, Bacău.

8.2 Seminary	-	-
8.3 Laboratory	Methods of teaching	No. of hours
1. Introduction to Ecology. The history of ecology in our country.	Presentation, description, observation, demonstration, directed learning.	4
2. Presentation of techniques for measuring the temperature of air, litter, soil and water	Presentation, description, observation, demonstration, directed learning.	4
3. Organization and operation of a population-type system; species – ecosystem interaction.	Presentation, description, observation, demonstration, directed learning.	4
4. The structure and functioning of a biocenosis type system: the biocenosis-biotope relationship	Presentation, description, observation, demonstration, directed learning.	4
5. Ecological diversity; conservation of biodiversity.	Presentation, description, observation, demonstration, directed learning.	4
6. Ecology of the biocenosis; the transfer of matter and energy within ecosystems.	Presentation, description, observation, demonstration, directed learning.	4

7. Description of biogeochemical cycles (water, carbon, oxygen, nitrogen cycle).	Presentation, description, observation, demonstration, directed learning.	4
--	---	---

#### **Bibliography**

1. Odum EP, Barrett GW (2005). Fundamentals of ecology. Fifth Ed. Belmont. Thomson Brooks/Cole.
2. Popescu Maria, Popescu Miron, 2000 – *Ecologie aplicată*, Editura Matrix ROM București.
3. Pricope F., Pricope LAURA, 2004 - *Poluarea mediului și conservarea naturii*, Editura Alma Mater, Bacău.
4. Stugren B., 1975 - *Ecologie generală*, Ed. Didactică și Pedagogică București.
5. Stugren B., Killyen H., 1975 – *Ecologie, probleme generale și de tehnologie didactică*, Editura Didactică și Pedagogică, București.
6. Teușdea V., 2000 - *Protecția Mediului*, Editura „Fundăției România de Măine”.
7. Ureche D., 2008 – *Studii ecologice privind ihtiofauna în bazinul mijlociu și inferior al râului Siret*, Editura Pim, Iași.

\* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

### **9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme**

Ecology is the research of interactions among different organisms and between organisms and their environment. Ecology and Environmental Protection is a rapidly developing multi-disciplinary field, urgently needed for curtailing the ongoing destruction of ecological systems. This discipline aims at understanding the systems that support life on earth, and provide services - economic, agricultural, health, environmental and social - to human society. In order to protect ecological systems in an age of global change, we have to understand the ecology and evolution of living beings, from the gene level to the level of the ecosystem.

### **10. Evaluation**

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	- for grade 5 - 50% knowledge of the subject for grade 6 - 60% knowledge of the subject for grade 7 - 70% knowledge of the subject Summative assessment - exam - written or oral test 70% subject for grade 8 - 80% knowledge of the subject for grade 9 - 90% knowledge of the subject for grade 10 - knowledge of the subject in proportion of 100% (the student proves the consultation of the presented bibliographic material).	Summative assessment - exam - written or oral test	70%
10.5 Seminary			
10.6 Laboratory	for grade 5 - the student answers 50% of the questions correctly for grade 6 - the student answers 60% of the questions correctly for grade 7 - the student	Practical evaluation	30%

	answers 70% of the questions correctly for grade 8 - the student answers 80% of the questions correctly for grade 9 - the student answers 90% of the questions correctly for grade 10 - the student answers 100% of the questions correctly		
10.7 Project			
10.8 Minimum standard of performance			
Execution of specific operations in the sphere of production according to the job description by complying with the rules of professional ethics and values. Making a portfolio by identifying and describing professional roles within a subordinate team. Accomplishing a bibliographic study on the course theme.			

Date of completion      Signature of course holder\*\*

01.10.2023                      Lecturer PhD Lucian Bara  
baralucian@yahoo.com

Signature of seminar  
laboratory/project holder \*\*

Lecturer PhD Lucian Bara  
baralucian@yahoo.com

Date of approval in the department

Signature of the Head of Department

01.10.2023

Lecturer eng. PhD Adrian Timar  
atimar@uoradea.ro

Dean signature

Assoc. prof. PhD Cristina Maerescu

\*\* - Name, first name, academic degree and contact details (e-mail, web page, etc) will be specified.

.....