

DISCIPLINE DESCRIPTION

1. Information on the study programme

1.1 Academic institution	UNIVERSITY OF ORADEA
1.2 Faculty	FACULTY OF ENVIRONMENTAL PROTECTION
1.3 Department	AGRICULTURE, HORTICULTURE
1.4 Fundamental field	ENGINEERING SCIENCES
1.5 Master field	AGRONOMY
1.6 Study programme/Qualification	MODERN TECHNOLOGIES IN AGRICULTURAL AND ZOOTECNICAL FARMS / ENGINEER

2. Information on the discipline

2.1 Name of discipline	AGRICULTURAL BIOTECHNOLOGIES						
2.2 Course holder	Ass. Prof. PhD. LAZĂR ANDRA NICOLETA						
2.3 Seminar/Laboratory/Project holder	Ass. Prof. PhD. LAZĂR ANDRA NICOLETA						
2.4 Year of study	I	2.5 Semester	1	2.6 Type of evaluation	Ex.	2.7 Regime of discipline	DAP

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

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

3.1 Number of hours per week out of which:	2	3.2. course	1	3.3. laboraty/project	1
3.4 Total hours in the curriculum out of which:	28	3.5. course	14	3.6. laboratory/project	14
Time allotment					hours
Study assisted by manual, course support, bibliography and notes					40
Additional documentation in the library/ on specialised electronic platforms and in the field					38
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					38
Tutorship					2
Examinations					2
Other activities.....					2
3.7 Total hours of individual study					122
3.9 Total hours per semester					108
3.10 Number of credits					6

4. Prerequisites (where appropriate)

4.1 curriculum	Knowledge of chemistry, botany, soil sciences, ecology, agricultural and horticultural crop technology, phytotechnics, plant protection, computer science.
4.2 competences	Abilities to understand, learn, be aware of and use the information accumulated during learning.

5. Conditions (where appropriate)

5.1. related to course	Video projector, computer.
5.2. related to seminar	- Materials needed for laboratory classes; - Knowledge of the notions presented in the laboratory paper.

6. Specific competences acquired	
Professional competences	<ul style="list-style-type: none"> - Knowledge of the importance and role of agriculture as a socio-economic activity, as a place and way of life, as well as environmental problems generated by agriculture; - Development of the analysis capacity of conventional and ecological technologies, which contributes to increasing the productivity of agri-food production; - Mastering by students the principles and methodology underlying organic farming, addressing specific issues related to knowledge and appreciation of the consequences of human impact on natural and agricultural ecosystems; - The influence of biological molecular factors on the biosynthesis processes of biologically active substances that are the basis for determining the population density of harmful organisms and improving the ecological situation in agriculture; - Familiarization with the technological processes of production and application of ecologically harmless means of plant protection in conventional and ecological agriculture systems; - Formation of a concept on the application of modern biotechnologies in solving environmental problems.
Transversal competences	<ul style="list-style-type: none"> - Knowledge and familiarization of master students with the methodology of analysis and evaluation of productivity in agriculture. Identifying effective means of supporting the productivity of land used in conventional and organic agriculture; - Demonstration of the abilities to understand, acquire, be aware of and use the information accumulated during the learning of botany, zoology, chemistry, pedology, ecology, agricultural plant cultivation technologies, informatics. - In order to facilitate the understanding, acquisition and use of information brought by the discipline of Agricultural Biotechnology, it is necessary for master students to have knowledge of: chemistry, botany, soil sciences, ecology, agricultural and horticultural crop technologies, phytotechnics, plant protection, informatics.

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

7.1 General objective	<p>Biotechnology in agriculture is a modern field, in full development, based on the application of biology in agriculture. Use biological systems, living organisms or their derivatives to obtain or modify products or processes for specific use.</p> <p>Biotechnology is a fascinating field of research and production with a spectacular dynamic, surpassed perhaps only by that of computer science. The accumulation of in-depth information on the technological levers for organizing the production of organic agri-food products will allow master students to master and implement the technological procedures for obtaining various agricultural products, based on improving environmental conditions and increasing the living standards of workers in rural sector.</p>
7.2 Specific objectives	<p>The student at the end of the course will be able to:</p> <ul style="list-style-type: none"> - understand the functionality of the mechanisms for maintaining the balance between plant and harmful organisms, as well as useful organisms, which are the basis of biological protection and organic farming; - learn the main aspects of the role of the components of agroecosystems (biologically active substances, antagonistic microorganisms and insect - mites) in maintaining the density of populations of harmful organisms until reaching the biological and economic damage threshold; - recognize the role and place of biological means of controlling harmful organisms and the degree of protection of agricultural crops;

	- acquire knowledge of the technologies for the production and application of biological means of plant protection and the production of organic products of different crops; - know the principles and means of setting up the organic farm.
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8. Content*/

8.1 Course	Methods of teaching	No. of hours/ Remarks
Global ecological problems caused by agricultural activity on Earth.	Interactive lectures	1
Agriculture and sustainable development.	Interactive lectures	1
Alternative farming systems.	Interactive lectures	1
Analysis and design of agricultural systems; concepts, definitions, organization, importance.	Interactive lectures	1
Generalities regarding the main branches of agricultural biotechnology and their applicability.	Interactive lectures	1
The main methods of in vitro cultures, necessary for the genetic modification of plants.	Interactive lectures	2
Development and application of biotechnologies for obtaining devirose biological material.	Interactive lectures	1
The concept of developing technological processes and biotechnologies for the production and application of biological means of plant protection.	Interactive lectures	2
Biotechnological processes for the production and application of biologically active plant protection substances.	Interactive lectures	2
Biotechnological processes for the production and application of entomophages and acariphages in the biological protection of plants.	Interactive lectures	2

Bibliography:

- Mihail Dumitru și colab. *Cod de bune practici agricole*, vol. I, Ed. Expert, București 2003;
- A. Fitiu *Ecologia și protecția mediului*, Ed. AcademicPres, Cluj-Napoca, 2003;
- A. Jeefrey, McNeely, J. Sara, Scherr *Ecoagriculture*, Island Press, 2003;
- F. Sala *Introducere în sisteme de agricultură*, Ed. SOLNESS, Timișoara, 2002;
- L. Voloșciuc *Biotehnologia producerii și aplicării preparatelor baculovirale în agricultura ecologică*, Chișinău: Mediul ambiant, 2009, 262p.;
- L. Voloșciuc *Probleme ecologice în agricultură*, Chișinău: Bons Offices, 2009, 264p.;
- S. Andrieș, B. Boincean, Gh. Jigău, M. Batcu, D. Galupa, L. Voloșciuc *Cod de Bune Practici Agricole*. Chișinău: Mediul ambiant. 2007. 100p;
- S. Andrieș, A. Rusu, A. Donos, I. Constantinov *Managementul deșeurilor organice, nutrienților și protecția solului*, Chișinău, 2005, 112 p.;
- Iu. Senic, A. Murahovschi *Producția agroalimentară ecologică (îndrumar)*, Chișinău, 2006, 36 p.;
- Gh. Jigău, G. Grigheli, A. Tărăță *Metode și reguli de evaluare și management a calității solurilor*. MAIA, CRPA, Chișinău, 2007, 76p.

8.3. Laboratory	Methods of teaching	No. of hours/ Remarks
Global ecological problems caused by agricultural activity on Earth.	Systematic presentation, demonstration, problematization	1
Agriculture and sustainable development.	Systematic presentation, demonstration, problematization	1
Alternative farming systems.	Systematic presentation, demonstration, problematization	1
Analysis and design of agricultural systems; concepts, definitions, organization, importance.	Systematic presentation, demonstration, problematization	1

Generalities regarding the main branches of agricultural biotechnology and their applicability.	Systematic presentation, demonstration, problematization	1
The main methods of in vitro cultures, necessary for the genetic modification of plants.	Systematic presentation, demonstration, problematization	2
Development and application of biotechnologies for obtaining devirose biological material.	Systematic presentation, demonstration, problematization	1
The concept of developing technological processes and biotechnologies for the production and application of biological means of plant protection.	Systematic presentation, demonstration, problematization	2
Biotechnological processes for the production and application of biologically active plant protection substances.	Systematic presentation, demonstration, problematization	2
Biotechnological processes for the production and application of entomophages and acariphages in the biological protection of plants.	Systematic presentation, demonstration, problematization	2
Bibliography: 1. Mihail Dumitru și colab. - <i>Cod de bune practici agricole</i> , vol. I, Ed. Expert, București 2003; 2. A. Fitiu <i>Ecologia și protecția mediului</i> , Ed. AcademicPres, Cluj-Napoca, 2003; 3. A. Jeffrey, McNeely, J. Sara, Scherr <i>Ecoagriculture</i> , Island Press, 2003; 4. F. Sala <i>Introducere în sisteme de agricultură</i> , Ed. SOLNESS, Timișoara, 2002; 5. L. Voloșciuc <i>Biotehnologia producerii și aplicării preparatelor baculovirale în agricultura ecologică</i> , Chișinău: Mediul ambiant, 2009, 262p.; 6. L. Voloșciuc <i>Probleme ecologice în agricultură</i> , Chișinău: Bons Offices, 2009, 264p.; 7. S. Andrieș, B. Boincean, Gh. Jigău, M. Batcu, D. Galupa, L. Voloșciuc <i>Cod de Bune Practici Agricole</i> . Chișinău: Mediul ambiant. 2007. 100p; 8. S. Andrieș, A. Rusu, A. Donos, I. Constantinov <i>Managementul deșeurilor organice, nutrienților și protecția solului</i> , Chișinău, 2005, 112 p.; 9. Iu. Senic, A. Murahovschi <i>Producția agroalimentară ecologică (îndrumar)</i> , Chișinău, 2006, 36 p.; 10. Gh. Jigău, G. Grigheli, A. Tărăță <i>Metode și reguli de evaluare și management a calității solurilor</i> . MAIA, CRPA, Chișinău, 2007, 76p.		

* 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

The content of the discipline is adapted and satisfies the requirements imposed by the labor market, being agreed by social partners, professional associations and employers in the field related to the Master's program. The content of the discipline can be found in the specialization curriculum and from other university centers in Romania, which have accredited this specialization.

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, all subjects must be treated to minimum standards For grade 10, all subjects must be treated to the highest standards	Oral examination.	60%
10.6. Laboratory	For grade 5, the student must answer at least 50% of the questions correctly For grade 10, the student must answer 100% of the questions correctly.	The student will be evaluated through a grid test, including questions from all the subjects covered.	40%
10.8 Minimum standard of performance			

Implementation and / or coordination of sustainable farming and animal husbandry techniques and use of specific means; rationale and methods of reasoning and procedures used. Development and implementation of technical projects and processes. Diagnosis of ecological restoration needs and available technological standards options for their application. Diagnosis of environmental and economic risks of agricultural and zootechnical holdings, definition of their objectives for protection and improvement in complex programs.

Date of completion

Signature of course holder

Signature of seminar holder

17.09.2020

Conf. univ. dr. biol. **Lazăr Andra Nicoleta**

Conf. univ. dr. biol. **Lazăr Andra Nicoleta**

Date of approval in the department

Signature of the Head of Department

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Prof. univ. dr. ing. Bandici Gheorghe-Emil

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Dean signature
Prof. dr. ing. Chereji Ioan

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