



No. _____ of _____

USAMV-CN- form-0107040103

SUBJECT OUTLINE

1. Information on the programme

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 study	Environmental Engineering
1.5. Cycle of study ¹	Bachelor
1.6. Specialization/ Study programme	Environmental Engineering
1.7. Form of education	Full time

2. Information on the discipline

2.1. Discipline name	The impact of agriculture on the environment							
2.2. Course coordinator	Prof. Dan Ioan VĂRBAN Phd							
2.3. Seminar/ laboratory/ project coordinator	Prof. Dan Ioan VĂRBAN Phd							
2.4. Year of study	IV	2.5. Semester	I	2.6. Evaluation type	summative	2.7. Discipline status	Continut ²	DS
							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					20
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					15
3.4.4. Tutorials					4
3.4.5. Examinations					10
3.4.6. Other activities					
3.7. Total hours of individual study	64				
3.8. Total hours per semester	120				
3.9. Number of credits ⁴	4				

4. Prerequisites (if applicable)

4.1. curriculum-related	Botany, Agricultural Machinery, Phytopathology, Entomology, Pedology, Agrochemistry,
4.2. skills-related	The student must have knowledge of plant description, agricultural machinery, diseases and pests, soil, pesticides

5. Conditions (where applicable)

5.1. for the course	The course is interactive, students can ask questions about the content of the exhibition. The university discipline requires the observance of the start and end time of the course. No other activities are tolerated during the lecture, mobile phones should be closed.
5.2. for conducting the seminar / laboratory / project	In the laboratory works it is compulsory to consult the practical guide, each student will carry out an individual activity with the laboratory materials made available



	and described in the practical works guide. The academic discipline is required throughout the duration of the works.
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6. Cumulated specific competences

Professional competences	<p>Elaborarea tehnologiilor de producție agricolă durabilă, organizarea și coordonarea realizării proceselor de producție</p> <p>Elaborarea de strategii pentru implementarea Politicilor Agricole Comunitare la nivel național</p> <p>Diagnosticarea și gestionarea problemelor legate de organizarea și managementul fermelor agricole</p> <p>Producerea de material biologic de calitate pentru înmulțirea plantelor de cultură</p> <p>Expertizarea terenurilor agricole, gestionarea și alocarea fondurilor pentru agricultură</p> <p>Asigurarea serviciilor de consultanță și extensie în agricultură</p>
Transversal competences	<p>Developing sustainable agricultural production technologies, organizing and coordinating the production processes</p> <p>Development of strategies for the implementation of Community Agricultural Policies at national level</p> <p>Diagnosis and management of problems related to the organization and management of agricultural farms</p> <p>Production of quality biological material for propagating crop plants</p> <p>Expertise of agricultural land, management and allocation of funds for agriculture</p> <p>Providing consulting and extension services in agriculture</p>

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

7.1. General objective	Preparation of students in the field of Environmental Engineering on the biology, ecology and technology of ecological cultivation of plants from large crops (cereals, legumes, oilseeds).
7.2. Specific objectives	<ul style="list-style-type: none"> - understanding the biology and the requirements of plants in relation to climate and soil; - knowledge of the interrelationships between the plant and various factors (climatic, edaphic, technological); - Acquiring the main working methods specific to the phytotechnics, culture technologies and knowledge of the main fields and specific achievements thereof (land preparation, sowing, crop care and harvesting); - establishing, based on the aforementioned elements, the optimal conditions of vegetation and nutrition at the plant level.

8. Content

8.1. COURSE Number of hours – 28	Teaching methods	Observations
The objectives and principles of organic farming. The advantages and disadvantages of this system of agriculture	Lecture	1 lecture= 2 hours
Organic fertilizers and plant protection features in this system	Lecture	2 lecture= 4 hours
The biological, ecological and technological factors that condition the production of field plants	Lecture	1 lecture= 2 hours
CEREALS Biological peculiarities of cereals	Lecture	1 lecture= 2 hours
The cultivation technology in an ecological system of wheat	Lecture	1 lecture= 2 hours
The cultivation technology in ecological system of maize	Lecture	2 lecture= 4 hours
LEGUMINOUS FOR SEEDS The cultivation technology in ecological peas system	Lecture	1 lecture= 2 hours
Cultivation technology in ecological bean system	Lecture	1 lecture= 2 hours
Cultivation technology in ecological system of soy	Lecture	1 lecture= 2 hours
OLEAGINOUS PLANTS The technology of cultivation in ecological system of	Lecture	2 lecture= 4 hours



the sun flower		
Cultivation technology in ecological rape system	Lecture	1 lecture= 2 hours

8.2. LABORATORY WORK Number of hours – 28	Teaching methods	Observations
Seed quality control Taking laboratory samples	Seed certification	1 laboratory work= 2 hours
Determination of the quality indices of the sowing material (physical purity, energy and germination power, humidity, TGW)	Seed certification	4 laboratory work= 8 hours
Establishing seed losses through storage, calculating useful seed and seed quantity per hectare.	Seed control during storage and quantification of seed quality indices	1 laboratory work= 2 hours
Cereals General particularities of cereals The genus Triticum The other cereals from the Poaceae Family	Seed recognition Study of plants	3 laboratory work= 6 hours
leguminous for seeds General characteristics of leguminous for grains The main legumes for cultivated grains	Seed recognition Study of plants	2 laboratory work= 4 hours
Oil plants Sunflower - biological peculiarities, determination of the quantity of seed kg / ha, determination of the percentage of shells	Seed recognition Study of plants	1 laboratory work= 2 hours
Rape - biological features, determining the necessary quantity of seed QS kg / ha		1 laboratory work= 2 hours
Verification of knowledge		1 laboratory work= 2 hours

Bibliography Required:

1. DAN I. VÂRBAN, 2014, TEHNOLOGII ECOLOGICE ÎN CULTURA PLANTELOR, Ed. AcademicPres, ISBN 978-973-744-115-7, 313 p
2. MUNTEAN, LEON S., MIRCEA TĂMAȘ, DAN I. VÂRBAN, SORIN MUNTEAN, LEON MUNTEAN, AVRAM FIȚIU, RODICA VÂRBAN, 2003. Tehnologii în agricultura ecologică – Plante medicinale și aromatice. Ed. Risoprint, Cluj-Napoca, 2003, ISBN 973-656-519-X.
3. MUNTEAN, LEON S., SOLOVĂSTRU CERNEA, MARCEL M. DUDA, AVRAM FIȚIU, DAN I. VÂRBAN, SORIN MUNTEAN, LEON MUNTEAN, 2003. Tehnologii în agricultura ecologică – Cereale, Plante oleoproteaginoase, plante textile, Ed. Risoprint, Cluj-Napoca, 2003, ISBN 973-656-519-X.
4. VÂRBAN DAN IOAN, Culturi de câmp, 2008, Ed. Risoprint Cluj-Napoca, ISBN 978-973-751-776-0, 259 p,;
5. MUNTEAN LEON S., S. CERNEA, G. MORAR, M. M. DUDA, DAN I. VÂRBAN, S. MUNTEAN, 2014, FITOTEHNIE, Ed. Risoprint, ISBN 978-973-53-0506-2, 718
6. VÂRBAN DAN IOAN – Note de curs

Optional bibliography:

1. ** 1999 – *la zi*. Bioterra. Revista bioagricultorilor. Editată de Asociația Bioagricultorilor din România. ISSN 1582-1803.
2. ** Catalogul oficial al soiurilor (hibridilor) de plante de cultură din România.

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 participate in the annual meeting of the Bioterra Society where they meet with the farmers, being debated current issues and perspective of the technology. ecological plant cultivation in Romania and Europe

10. Evaluation



Activity type	10.1. Evaluation criterias	10.2. Methods of evaluation	10.3. Percentage of the final grade
10.4. Cours	Knowledge of the objectives and principles of the organic farming system Knowledge of the fertilizers used in the agricultural system. Ecological. Knowledge of the control methods used in plant protection Knowledge of the biological particularities and the requirements regarding the climate and soil of the different cereals. Knowledge of the cultivation technology of the main crop plants, in the agricultural system ecological.	Exam written	70%
10.5. Seminar / Laboratory	Knowledge of determining the main quality indicators of seeds Recognition of seeds and plants of culture	There are 3 checks during the course	30%
10.6. Minimum standard of performance			
Mastery of scientific information transmitted through lectures and practical papers at an acceptable level. Obtaining the passing grade for on-the-spot checks is a condition of promotability.			

¹ The cycle of studies - one of the variants is chosen - Bachelor / Master / Doctorate

² Discipline regime (content) - level undergraduate choose one of variantele- DF (fundamental discipline), DD (discipline domain), SD (Specialized discipline), DC (complementary discipline).

³ The regime of the discipline (compulsory) - one of the variants is chosen - DI (compulsory discipline) DO (optional discipline) DFac (facultative discipline).

⁴ A credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Date completed
04.09.2019

Course holder
Prof. Dan VĂRBAN Phd.

Holder of laboratory works / seminars
Prof. Dan VĂRBAN Phd.

Date of approval in the department
05.09.2019

Department Director
Prof. Marcel DUDA Phd.