Annex 6

SUBJECT OUTLINE

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 Field of study	**AGRONOMY**
1.5 Cycle of study	**BACHELOR**
1.6 Study programme/Qualification	**AGRICULTURE/ENGINEER**

2. Information on the discipline

2.1 Name of discipline			**CROP SCIENCE I**				
2.2 Course holder			Assoc. Proff. BORZA IOANA MARIA, PhD				
2.3 Seminar/Laboratory/Project holder			Assoc. Proff. BORZA IOANA MARIA, PhD				
2.4 Year of study	III	2.5 Semester	VI	2.6 Type of evaluation	Summative	2.7 Regime of discipline	I

(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 seminar/laboratory/project	2
3.4 Total hours in the curriculum	56	out of which: 3.5 course	28	out of which 3.6 seminar/laboratory/project	28

Time allotment	hours
Study assisted by manual, course support, bibliography and notes	33
Additional documentation in the library/ on specialised electronic platforms and in the field	15
Preparation of seminars/laboratories/ topics/reports, portfolios and essays	30
Tutorship	3
Examinations	3
Other activities.....	-

3.7 Total hours of individual study	**84**
3.9 Total hours per semester	**140**
3.10 Number of credits	5

4. Pre-requisites (where appropriate)

4.1 curriculum	Botany, Plant Physiology, Agrotechnics, Phytopathology, Entomology
4.2 competences	Knowledge by students of the fundamental notions regarding biology, ecology and plant crop technology.

5. Conditions (where appropriate)

5.1. related to course	Video projector, computer, drawings
5.2. related to seminar/laboratory/ project	Specific equipment for making determinations (drying stove, granomat, hectoliter balance), seeds of different plant species, collections of plants from the group of cereals and leguminous plants Making laboratory classes

6. Specific competences acquired	
Professional competences	C1. Development of sustainable agricultural production technologies, organization and coordination of production processes C1.1 Description of the scientific, theoretical and practical foundations underlying the development and application of sustainable agricultural production technologies C1.2 Explaining the need to use different technological links, correlated with environmental factors and with the requirements of cultivated plants; explaining and interpreting the interrelationships between the adopted agricultural production systems and the environment C1.4 Qualitative and quantitative analysis (physico-chemical analyzes for the obtained productions; physical, chemical and biological analyzes for the seeds of the cultivated plants C6. Providing consulting and extension services in agriculture
Transversal competences	CT1. Development and observance of a work program and accomplishment of one's own attributions with professionalism and rigor. CT2. Applying efficient communication techniques in specific activities of teamwork; assuming a role within the team and respecting the principles of the division of labor. CT3. Objective self-assessment of the need for continuous professional training in order to constantly adapt and respond to the demands of economic development; the use of information and communication techniques and, at least, a language of international circulation.

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

7.1 General objective	Training of the students in the study program Agriculture regarding the biology, ecology and technology of cultivation of large crops (cereals, leguminous for grains, cleaning and preservation as well the seed quality control, ensuring the necessary knowledge to include future graduates in the activity of production, research or education.
7.2 Specific objectives	The aim will be for students to learn modern technologies based on ecological principles in order to obtain large, constant, high-quality productions with economic consumption of materials, energy and pesticides for the protection of the environment and agricultural products.

8. Contents*/

8.1 Course	Methods of teaching	No. of hours/Remarks
1. Crop science. Importance, objectives, the connection of the crop science with other sciences.	Presentation of the theoretical aspects related to	2

	the subject	
2. Current and perspective problems of field plant crops in Romania. Land use and structure of the main groups of agricultural crops in Romania.	Presentation of the theoretical aspects related to the subject	2
3. The ways to increase the yields of field crops in our country.	Presentation of the theoretical aspects related to the subject	2
4. The main factors that condition the increase of the production at the field plants. Ecological factors. Ecological cultivating plants areas.	Presentation of the theoretical aspects related to the subject	2
5. Biological factors (variety, hybrid, quality of sowing material). Technological and socio-economical factors.	Presentation of the theoretical aspects related to the subject	2
6. Seed cleaning, seed storage and preservation of agricultural products. Importance, historical. Organizing the preservation of agricultural products in Romania.	Presentation of the theoretical aspects related to the subject	2
7. The physical properties of the seed mass.	Presentation of the theoretical aspects related to the subject	2
8. Physiological processes in the seed mass during storage. Seed heating.	Presentation of the theoretical aspects related to the subject	2
9. Seed cleaning: principles, stages	Presentation of the theoretical aspects related to the subject	2
10. The main characteristics of the seeds based of the cleaning; cleaning seeds machines	Presentation of the theoretical aspects related to the subject	2
11. Spaces for storage and storage of cereal seeds	Presentation of the theoretical aspects related to the subject	2
12. Seed conservation methods. Losses that occur during storage.	Presentation of the theoretical aspects related to the subject	2
13. Cereals. Importance, spreading, cultivated areas, chemical composition	Presentation of the theoretical aspects related to the subject	2
14. The main biological and ecological particularities of the cereals.	Presentation of the theoretical aspects related to the subject	2

Bibliography

1. **Bîlteanu Gh., Salontai Al., Vasilică C., Bîrnaure V., Borcean I., 1991** – Fitotehnie. Ed. Didactică şi Pedagogică, Bucureşti
2. **Bîlteanu Gh., 2003** – Fitotehnie vol I. Ed. Ceres, Bucureşti
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4. **Borcean I., Gh. David, A. Borcean, 2006** – Tehnici de cultură şi protecţie a cerealelor şi leguminoaselor. Ed. De Vest, Timişoara
5. **Borcean I., Gh. David, A. Borcean, 2006** – Tehnici de cultură şi protecţie a plantelor tehnice. Ed. De Vest, Timişoara
6. **Borza I.M., Stanciu A.S., 2008 -** Practicum de Fitotehnie partea I. Ed. Universităţi din Oradea
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10. **Muntean L.S., S. Cernea, G. Morar, M. M. Duda, D. I. Vârban, S. Muntean, 2008** – Fitotehnie, Ed. AcademicPres Cluj-Napoca
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12. **Muntean L.S. şi colab, 2014** – Fitotehnie, Ed. AcademicPres Cluj-Napoca
13. **Mogârzan Aglaia, Robu T. 2005** - Tehnologia păstrării produselor agricole vegetale. Editura "Ion Ionescu de la Brad" Iaşi,
14. **Roman Gh. V. şi colab, 2012** – Condiţionarea şi păstrarea produselor agricole . Ed. Universitară Bucureşti
15. **Vârban Dan Ioan, 2008** – Culturi de câmp. Ed. Risoprint, Cluj-Napoca

8.2 Seminar 8.3 Laboratory	Methods of teaching	No. of hours/ Remarks
1. The sowing of the autumn cereals.	Presentation of the theoretical and	2

	practical aspects related to the subject, lecture, practical activity	
2. Taking and formation the laboratories samples	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
3. Subjective analysis. Objective analysis. Determination of physical purity of seeds	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
4. Determination of seed mass: MMB	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
5. Determination of seed mass: MH, absolute mass, specific mass	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
6. Appreciation of autumn sowing at the beginning of winter.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
7. Determination of seed glassiness. Determination of seed viability by biochemical methods.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
8. Determination of seed germination. (1). The power of penetration.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
9. Germination (2). Power of crossing (2). Germination calculation and appreciation of determination methods.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
10. Determination of seed moisture	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
11. Seed moisture calculation. Documents issued by the Seed Control Laboratory.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
12. Sample reception and technological flow of seed quality control	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
13. Recognition of cereals by root, stem, leaf. Growth phases in cereals. Types of twinning	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
14. Recognition of cereals by inflorescence and fruit	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2

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14. **Roman Gh. V. și colab, 2012** – Condiționarea și păstrarea produselor agricole . Ed. Universitară București

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* 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 the epistemic communities (which study the process of spatial planning of a space as it should take place in science), social partners, professional associations and employers in the field Agriculture. The content of the discipline is found in the curriculum of the Agriculture programme and from other university centers in Romania that have accredited this specialization, so the knowledge of the basic notions is an important requirement of the employers in the field of Agriculture - Horticulture.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of the final grade
10.4 Course	For note 5: both subjects must be treated to minimum standards; For grades> 5 subjects must be treated to higher standards	Exam, oral	70%
10.5 Seminar			
10.6 Laboratory	In the last session, the students will present the works performed, respectively the results obtained. All work must be done, provided you enter the exam. Recovery of only one remaining laboratory is allowed (in the last week of the semester)	Colloquium, oral	30 %
10.7 Project	-		
10.8 Minimum standard of performance			
Development and application of an economically efficient yield technology with a positive ecological and social impact depending on the specific ecological conditions			

Date of completion: 02.10.2020

Signature of course holder**: Assoc. Proff. Borza Ioana Maria, PhD
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Signature of seminar laboratory/project holder **: Assoc. Proff. Borza Ioana Maria, PhD

Date of approval in the department: 05.10.2020

Signature of the Head of Department***: Proff. BANDICI Gheorghe Emil, PhD
gbandici@yahoo.com

Dean signature***: Proff. CHEREJI Ioan, PhD
ichereji@uoradea.ro

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

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*** - Name, first name, academic degree and contact details (e-mail, web page, etc) of the academic entity beneficiary of the Discipline Outline will be specified.
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