

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	HORTICULTURE
1.5 Cycle of study	BACHELOR
1.6 Study programme/Qualification	HORTICULTURE/ENGINEER

2. Information on the discipline

2.1 Name of discipline	CROP SCIENCE						
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	II	2.5 Semester	IV	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					20
Additional documentation in the library/ on specialised electronic platforms and in the field					13
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					15
Tutorship					6
Examinations					2
Other activities.....					20
3.7 Total hours of individual study	56				
3.9 Total hours per semester	56				
3.10 Number of credits	4				

4. Pre-requisites (where appropriate)

4.1 curriculum	Botany, Plant Physiology
4.2 competences	Agrotechnics, Agrochemistry, Agrometeorology

5. Conditions (where appropriate)

5.1. related to course	Video projector, computer, drawings
5.2. related to	Seeds, drawings, plant collections

seminar/laboratory/ project	
-----------------------------	--

6. Specific competences acquired	
Professional competences	<p>C1.1. Description of the scientific, theoretical and practical foundations underlying the development and application of sustainable agricultural production technologies.</p> <p>C1.3. Application of appropriate methods, techniques and procedures for the customization and optimization of technological processes of sustainable agricultural production.</p> <p>C1.4. Qualitative and quantitative analysis of the effects of the technologies used (physico-chemical analyzes on the obtained productions; physical, chemical and biological analyzes on the components of the environment, which may be affected by the applied agricultural technologies; use of specific methods to assess the impact of applied technologies on biodiversity).</p> <p>C1.5. Development of sustainable technological solutions for conventional agricultural production systems; design of alternative production systems (organic farming) and new technologies for particular cases.</p>
Transversal competences	<p>CT1 Elaboration and observance of a work program and accomplishment of one's own attributions with professionalism</p> <p>CT2 Applying effective communication techniques in specific activities of teamwork, assuming a role within the team and respecting the principles of division of labor</p> <p>CT3 Objective self-assessment of the need for continuous professional training in order to constantly adapt and respond to the demands of economic development.</p>

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

7.1 General objective	The course aims to teach students the notions of biology, ecology and technology of plant cultivation (cereals, leguminous for grains, oilseeds, tuberculiferous and roots, tobacco, hops, medicinal plants) their cleaning and conservation and seed quality control , ensuring the necessary knowledge for the employment of future graduates in the activity of production, research or education.
7.2 Specific objectives	Scientifically cultivation technologies of field plants important for Romania in order to obtain high yields, economically efficient and in agreement with the requirements of environmental protection.

8. Contents*/

8.1 Course	Methods of teaching	No. of hours/Remarks
1. General crop science problems. The object of the crop science and the connection with other sciences. Factors of vegetable agricultural yields. Ecological cultivating plants areas.	Presentation of the theoretical aspects related to the subject	2
2. Cereals. Generalities. Biological particularities of the cereals. Wheat. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
3. Rye. Barley. The oats. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop	Presentation of the theoretical aspects related to the subject	2

technology.		
4. Maize. Sorghum. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
5. Leguminous for grains. Generalities. The pease. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
6. Beans. Soybean. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
7. Oily plants. Generalities. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
8. Castor bean. Rape. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
9. Textile plants. Generalities. Flax for fiber. Hemp. Cotton. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
10. Sugar beet. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
11. The potato. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
12. Tobacco. Hops. Importance, cultivated areas, systematics, chemical composition, biological and ecological particularities, ecological cultivating plants areas, crop technology.	Presentation of the theoretical aspects related to the subject	2
13. Medicinal and aromatic plants. Generalities.	Presentation of the theoretical aspects related to the subject	2
14. Cultivated fodder plants. Alfalfa. Red clover. Other cultivated forage plants.	Presentation of the theoretical aspects related to the subject	2
Bibliography		
<ol style="list-style-type: none"> 1. Bîlteanu Gh., Salontai Al., Vasiliță C., Birnaure V., Borcean I., 1991 – Fitotehnie. Ed. Didactică și Pedagogică, București 2. Bîlteanu Gh., 2001 – Fitotehnie vol. II., Ed. Ceres, București 3. Bîlteanu Gh., 2003 – Fitotehnie vol I. Ed. Ceres, București 4. Borcean I., 2003 – Fitotehnie. Ed. Ion Ionescu de la Brad, Iași 5. Borcean I., Gh. David, A. Borcean, 2006 – Tehnici de cultură și protecție a cerealelor și leguminoaselor. Ed. De Vest, Timișoara 6. Borcean I., Gh. David, A. Borcean, 2006 – Tehnici de cultură și protecție a plantelor tehnice. Ed. De Vest, Timișoara 7. Borza I, Stanciu A., 2008 – Practicum de Fitotehnie partea I. Ed. Universității din Oradea 8. Borza I, Stanciu A., 2010 – Fitotehnie. Ed. Universității din Oradea 9. Cernea S., 1997– Fitotehnie, Ed. Genesis, Cluj-Napoca 10. David Gh., Pîrșan P., Imbrea Fl., 2006 - Tehnologia plantelor de camp, cereale și leguminoase pentru boabe, Ed. Eurobit, Timișoara 11. Duda M., D. Vârban, Muntean. S., 2003 – Fitotehnie, îndrumător de lucrări practice, Partea I., Ed. AcademicPres, Cluj-Napoca 12. Muntean L.S., și colab., 2014 – Fitotehnie, Ed. AcademicPres Cluj-Napoca 13. Niță Simona- Fitotehnie, Ed. Eurobit, 2004. 14. Tabără V. Fitotehnie vol I – Plante tehnice oleaginoase și textile. Editura Brumar Timișoara 2005. 15. Tabără V. Fitotehnie vol II - Plante tehnice tuberculifere și rădăcinoase. Editura Brumar Timișoara 2005. 16. Vârban Dan Ioan, 2008 – Culturi de câmp. Ed. Risoprint, Cluj-Napoca 		
8.2 Seminar	Methods of teaching	No. of hours/
8.3 Laboratory		Remarks
1. Seed quality control. Taking and forming laboratory	Presentation of the theoretical and	2

samples Determining the quality indices of the sowing material (purity, MMB)	practical aspects related to the subject, lecture, practical activity	
2. Determination of the hectolitre mass (MHL) of the seed. Determination of seed germination.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
3. Determination of seed moisture. Establishing the quality class of seeds, calculating the useful seed and the quantity of seed per hectare.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
4. Recognition of cereals by root, stem, leaf, inflorescence and fruit. Cereals: Systematics, biological particularities. Wheat production estimation technique.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
5. Barley varieties: Systematic, biological particularities.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
6. Maize, Sorghum. Systematic, biological particularities.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
7. Leguminous for grains. Recognition of species, varieties, by seeds and in different phases of vegetation. General characters. Seed treatment technology with NITRAGIN biopreparations.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
8. Peas, Beans, Soybeans: Systematics, biological particularities.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
9. Oily plants. Recognition of species, varieties and hybrids of oil plants by seeds and in different phases of vegetation. Sunflower, Rape: Systematics, biological particularities.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
10. Textile plants. Recognition by seeds and plants in different phases of vegetation. Characteristics of cultivated varieties	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
11. Sugar beet. Anatomic-morphological characteristics of the root. Variety recognition and characterization. Determination of the sugar content.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
12. The potato. Systematics, biological particularities.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
13. Tobacco. Morphological characteristics of the plant and varieties. Hops. Systematics, biological particularities.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2
14. Medicinal and aromatic plants. Recognition by seeds, plants and drugs of the main species. Cultivated fodder plants. Recognition of the main forage species cultivated by seeds and plants.	Presentation of the theoretical and practical aspects related to the subject, lecture, practical activity	2

Bibliography

1. **Bilteanu Gh., Salontai Al., Vasilică C., Birnaure V., Borcean I., 1991** – Fitotehnie. Ed. Didactică și Pedagogică, București
2. **Bilteanu Gh., 2001** – Fitotehnie vol. II., Ed. Ceres, București
3. **Bilteanu Gh., 2003** – Fitotehnie vol I. Ed. Ceres, București
4. **Borcean I., 2003** – Fitotehnie. Ed. Ion Ionescu de la Brad, Iași
5. **Borcean I., Gh. David, A. Borcean, 2006** – Tehnici de cultură și protecție a cerealelor și leguminoaselor. Ed. De Vest, Timișoara
6. **Borcean I., Gh. David, A. Borcean, 2006** – Tehnici de cultură și protecție a plantelor tehnice. Ed. De Vest, Timișoara
7. **Borza I, Stanciu A., 2008** – Practicum de Fitotehnie partea I. Ed. Universității din Oradea
8. **Borza I, Stanciu A., 2010** – Fitotehnie. Ed. Universității din Oradea
9. **Cernea S., 1997** – Fitotehnie, Ed. Genesis, Cluj-Napoca
10. **David Gh., Pîrșan P., Imbrea Fl., 2006** - Tehnologia plantelor de câmp, cereale și leguminoase pentru boabe, Ed. Eurobit, Timișoara
11. **Duda M., D. Vârban, Muntean. S., 2003** – Fitotehnie, îndrumător de lucrări practice, Partea I., Ed. AcademicPres, Cluj-Napoca
12. **Muntean L.S., și colab., 2014** – Fitotehnie, Ed. AcademicPres Cluj-Napoca
13. **Niță Simona-** Fitotehnie, Ed. Eurobit, 2004.

14. **Tabără V.** Fitotehnie vol I – Plante tehnice oleaginoase și textile. Editura Brumar Timișoara 2005.
 15. **Tabără V.** Fitotehnie vol II - Plante tehnice tuberculifere și rădăcinoase. Editura Brumar Timișoara 2005.
 16. **Vârban Dan Ioan, 2008** – Culturi de câmp. Ed. Risoprint, Cluj-Napoca

* 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.

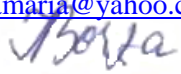
9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme

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 horticultural 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 Horticulture.

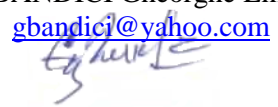
10. Evaluation

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			

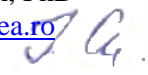
Date of completion	Signature of course holder**	Signature of seminar laboratory/project holder **
02.10.2020	Assoc. Proff. Borza Ioana Maria, PhD e-mail: borzaioanamaria@yahoo.com ; iborza@uoradea.ro	Assoc. Proff. Borza Ioana Maria, PhD



Date of approval in the department	Signature of the Head of Department***
05.10.2020	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.

.....

*** - 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.
