



No. _____ of _____

USAMV form 0104020102 (discipline code)

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 study¹	Bachelor
1.6. Specialization/ Study programme	Environmental Engineering
1.7. Form of education	Full time

2. Information on the discipline

2.1. Discipline name		Botany						
2.2. Course coordinator				Șef lucr. dr. Andrei Stoie				
2.3. Seminar/ laboratory/ project coordinator				Șef lucr. dr. Andrei Stoie				
2.4. Year of study	II	2.5. Semester	II	2.6. Evaluation type	summative	2.7. Discipline status	Content 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					24
3.4.2. Additional documentation in the library, electronic platforms and field experiences					10
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					15
3.4.4. Tutorials					5
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 credits⁴	4				

4. Prerequisites (if applicable)

4.1. curriculum-related	Botany - general concepts
4.2. skills-related	-

5. Conditions (if 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 on silent mode.
5.2. for the seminar/ laboratory/ project	In laboratory and field works it is compulsory to consult the tutorial book, each student will carry out an individual activity with the laboratory materials made available and described in the tutorial book. Academic discipline is required for the entire duration of the work.

6. Cumulated specific competences

Professional competences	<p>Knowledge of some notions of plant anatomy and morphology.</p> <p>Characterization and classification of vegetal organisms (plants, fungi, protists and prokaryotes).</p> <p>Identification and classification of species in taxa</p> <p>The identification and systematic classification of vegetal organisms according to morphological criteria</p> <p>Aspects related to the ecology and importance of the systematic groups and species studied.</p>
Transversal competences	<p>Skills in the preparation of microscopic sections.</p> <p>Identification and recognition of plants by morphological characters.</p>

7. Discipline objectives (based on the cumulated specific competences)

7.1. General objective	<p>General presentation of the morphological and anatomical parts of plants (root, stem, leaf, flower, fruit, seed), as well as some notions of plant cytology (plant cell study) and plant histology (plant tissue study). The classification of vegetal organisms in the four kingdoms studied by botany: Monera, Protista, Fungi and Plantae. General presentation of the four extant divisions of the Plantae kingdom (mosses, ferns, gymnosperms and angiosperms) as well as some more representative botanical families, from the classes of dicotyledons and monocotyledons.</p>
7.2. Specific objectives	<p>Explanation of the structure and functions of the organisms studied by botany, on morphological, tissue and cellular basis. Knowledge of the specificity of the Romanian flora and of some representatives from the main taxonomic units.</p> <p>These notions are necessary for the identification of plants in nature and for understanding the various phenomena related to the vegetal world.</p>

8. Content

8.1. COURSE Number of hours - 28	Teaching methods	Observation
Plant cytology and histology	Lecture	1 lecture (1 lecture = 2 hours)
The root, the stem and the leaf	Lecture	2 lectures
The flower, the inflorescence, the fruit and the seed	Lecture	2 lectures
Monera, Protista and Fungi kingdoms	Lecture	2 lectures
The divisions of the Plantae kingdom	Lecture	2 lectures
Class Magnoliopsida - dicots	Lecture	4 lectures
Class Liliopsida - monocots	Lecture	1 lecture

8.2. PRACTICAL WORKS Number of hours -	Teaching methods	Observation
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Presentation of the working methodology in the botany laboratory and in the botanical garden of USAMV Cluj-Napoca	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Plant cells and plant tissues	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Anatomy of some plant organs	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Root and stem morphology	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Leaf morphology	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Morphology of flowers and inflorescences	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Fruit morphology and seed structure	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Species of the kingdoms Monera, Protista, Fungi and of the Plantae kingdom species of the divisions: Bryophyta (muscles), Pteridophyta (ferns) and Pinophyta (Gymnosperms)	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Species from botanical families: Rosaceae and Fabaceae	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Species from botanical families: Fagaceae, Cucurbitaceae, Brassicaceae, Chenopodiaceae and Lamiaceae	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Species from botanical families: Asteraceae and Apiaceae	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Species of botanical families: Liliaceae and Poaceae	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Species identification in habitat.	Theoretical and practical presentation of the biological material	1 lab work (2 hours/work)
Final colloquium for verification of knowledge.	Examination of knowledge	1 lab work (2 hours/work)
<i>Compulsory bibliography:</i>		
<ol style="list-style-type: none"> 1. Stoie A., (2015), Botanica. Manual didactic, Ed. AcademicPres Cluj-Napoca. 2. Stoie A., R. Vârban, (2018), Botanică - îndrumător de lucrări practice, Ed. Bioflux Cluj-Napoca. 		
<i>Optional bibliography:</i>		
<ol style="list-style-type: none"> 1. Bresinsky A., Korner C., Kadereit J. W., Neuhaus G., Sonnewald U., (2008), Strassburger Lehrbuch der Botanik, Spektrum Akademischer Verlag Heidelberg, Germany. 2. Ciobanu I., (1965), Morfologia plantelor, Ed. didactică și pedagogică. București. 3. Cristea V., (2014), Plante vasculare: diversitate, sistematică, ecologie și importanță. Editura Presa Universitară Clujeană, Cluj-Napoca, 4. Moldovan I., D. Pazmany, E. Chircă, (1988), Practicum de botanică, Tipo Agronomia, Cluj - Napoca. 5. Păun M., E. Turenschi, S. Grigore, (1980), Botanică, , Ed. Didactică și pedagogică București. 6. Popescu Gh. Gh., (2009) , Introducere în botanica filogenetică, Ed. Sitech, Craiova. 7. Stoie A., R. Vârban, (2012), Botanică - Morfologia și anatomia plantelor, îndrumător de lucrări practice, Ed. AcademicPres Cluj-Napoca. 8. Vârban R., (2013), Botanică. morfologia și anatomia plantelor, Ed. AcademicPres Cluj-Napoca. 9. Vârban R., A. Stoie, (2013), Botanică - Botanică sistematică, lucrări practice, , Ed. AcademicPres Cluj-Napoca 10. *** Atlase botanice, determinatoare de plante, Flora României, etc. 11. http://rbg-web2.rbge.org.uk - Flora Europaea. 		

12. <http://www.ipni.org> - International Plant Names Index.

13. <http://www.theplantlist.org/> - The Plant List - a working list of all known plant species

9. Corroborating the discipline content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field

We have made a very rigorous selection of the really essential aspects for the harmonious understanding of the whole vegetal world. Updating is desired, by permanently consulting the content of other botany courses and textbooks, especially those in English and German, with the aim to bring changes in the systematic classification of living organisms to a modern level, a classification that has undergone important changes, especially after refinement of the molecular and genetic techniques for studying phylogenetic relationships. However, not all the classifications proposed lately have been adopted because many have almost only cladistic justifications and rather lead to the loss of clarity in the overall vision on the living things, especially from a didactic point of view. In order to provide a systematic classification as simple as possible but at the same time natural, correct and robust, a combination of classical and cladistic biological systematics has been achieved, with a generous acceptance of paraphyletic taxa.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percentage of the final grade
10.4. Course	To know the usual notions, principles and methods necessary for the study of plants, fungi, protists and prokaryotes. Be able to describe the main components of plants. To know and be able to describe the main taxonomic groups of vegetal organisms (plants, fungi, protists and prokaryotes). To be able to place plants and other vegetal organisms in the corresponding taxonomic groups, based on their biological characteristics To know some important plant species from a practical or evolutionary point of view.	Exam summative(E)	70%
10.5. Seminar/Laboratory	Be able to identify and describe the important morphological characteristics in the characterization and classification of plants. To recognize the most common species of plant and other vegetal organisms based on the biological material studied. To place these species in the appropriate systematic groups.	Laboratory exam summative(E)	30%

10.6. Minimum performance standards

The logical knowledge and understanding of scientific information, transmitted through lectures and practical teaching, at an acceptable level. Obtaining the pass mark at the laboratory exam is a condition of promotability.

¹ Cycle of studies - choose one of the three options: Bachelor/Master/Ph.D.

² according to the educational plan

³ Discipline status (compulsoriness) - choose one of the options - DI (compulsory discipline) DO (optional discipline) DFac (facultative discipline).

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

Filled in on
04.09.2019

Course coordinator
Şef lucr. dr. Andrei Stoie

Laboratory work/seminar coordinator
Şef lucr. dr. Andrei Stoie

Approved by the
department on
05.09.2019

Head of the Department
Prof.dr. Ioan OROIAN