UNIVERSITATEA "ŞTEFAN CEL MARE" SUCEAVA
FACULTATEA DE SILVICULTURĂ
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Guide ECTS
– *Information Package* –

Faculty of Forestry

valid for the university year 2017-2018

A. Undergraduate level / BSc Programmes

A.1. **Silviculture** Programme**:**
Field of Study: Silviculture – 4 years

A.1.1. List of courses
A.1.2. Description of courses

A.2. **Ecology and Environment Protection** Programme**:**
Field of Study: Environmental Sciences – 3 years

A.2.1. List of courses
A.2.2. Description of courses

B. Master Level / MSc Programmes - 2 years

B.1. ***Biodiversity Conservation and Ecosystem Management*** *Programme*

B.1.1. List of courses
B.1.2. Description of courses

B.2. ***Management of Forestry Activities*** *Programme*

B.2.1. List of courses
B.2.2. Description of courses

A.1.1. List of courses Silviculture Programme: 2017-2018

Undergraduate level / BSc Programme SILVICULTURE				
Code	**Courses**	**ECTS credits**		**Contact person: e-mail**
		Autumn	**Spring**	
1st year, 1st Semester				
DF.DO.1.01	Chemistry-Biochemistry	**4**		Marian Rîșca: risca@usv.ro
DF.DO.1.02	Physics-Biophysics	**4**		Petru Știucă: pstiuca@fim.usv.ro
DF.DO.1.03	Descriptive geometry	**5**		Ioan Ciornei: ioanciornei@usv.ro Marcel Flocea: marcelflocea@yahoo.fr
DD.DO.1.04	Informatics	**4**		Iulian Dănilă: iuliandanila@ymail.com
DF.DO.1.05	Forest Botany	**5**		Cezar Tomescu: tomcezar@yahoo.com
DF.DO.1.06	Land surveying and geodesy	**5**		Ovidiu Iacobescu: oiacobescu@gmail.com
DC.DO.1.11	French class I / English class I	**3**		Crina Coroi: crinacoroi@litere.usv.ro Daniela Hăisan: daniella.haisan@gmail.com
DC.DA.1.12	Sports	**0**		Virgil Larionescu: virgill@usv.ro
1st year, 2nd Semester				
DF.DO.2.05	Forest Botany		**5**	Cezar Tomescu: tomcezar@yahoo.com
DF.DO.2.06	Land surveying and geodesy		**5**	Ovidiu Iacobescu: oiacobescu@gmail.com
DF.DO.2.07	Mathematics		**4**	Angela Paicu: paicu@usv.ro
DS.DO.2.08	The history of forests		**2**	Anca Măciucă: ancam@usv.ro
DF.DO.2.09	Plant physiology		**4**	Cătălina Barbu: barbu_catalina2003@yahoo.com
DS.DO.2.10	Mechanics and strength of materials		**4**	Gheorghe Frunză: frunza@fim.usv.ro
DC.DO.2.11	French class I / English class I		**3**	Crina Coroi: crinacoroi@litere.usv.ro Daniela Hăisan: daniella.haisan@gmail.com
DC.DA.2.12	Sports		**3**	Virgil Larionescu: virgill@usv.ro
2nd year, 1st Semester				
DF.DO.3.01	Biostatistics	**4**		Sergiu Horodnic: horodnic@usv.ro
DD.DO.3.02	Phytopathology	**5**		Margareta Grudnicki: margaretag@usv.ro
DD.DO.3.03	Soil science	**5**		Alexei Savin: alexeisavin@gmail.com
DD.DO.3.04	Dendrology	**5**		Florin Clinovschi: clinovsc@fim.usv.ro
DF.DO.3.05	Forest ecology and climatology	**5**		Anca Măciucă: ancam@usv.ro
DC.DO.3.10	French class II / English class II	**2**		Crina Coroi: crinacoroi@litere.usv.ro Daniela Hăisan: daniella.haisan@gmail.com
DC.DA.3.11	Sports	**0**		Virgil Larionescu: virgill@usv.ro
DC.DA.3.13a/b	Philosophy / Public Communication	**4**		Rodica Iacobescu: roiacobescu@yahoo.fr
2nd year, 2nd Semester				
DD.DO.4.04	Dendrology		**4**	Florin Clinovschi: clinovsc@fim.usv.ro
DF.DO.4.05	Forest ecology and climatology		**4**	Anca Măciucă: ancam@usv.ro
DF.DO.4.06	Forest Genetics and Tree Breeding I		**4**	Liviu Fărtăiș: fartaisliviu@yahoo.com
DS.DO.4.07	Soils and forest sites		**4**	Alexei Savin: alexeisavin@gmail.com
DD.DO.4.08	Soil mechanics and forestry construction		**3**	Dan Zarojanu: zarojanu@usv.ro
DD.DO.4.09	Dendrometry I		**4**	Daniel Avăcăriței: davacaritei@yahoo.com
DC.DO.4.10	French class II / English class II		**2**	Crina Coroi: crinacoroi@litere.usv.ro Daniela Hăisan: daniella.haisan@gmail.com
DC.DA.4.11	Sports		**2**	Virgil Larionescu: virgill@usv.ro
DS.DO.4.12	Internship		**3**	
3rd year, 1st Semester				
DD.DO.5.01	Dendrometry II	**4**		Daniel Avăcăriței: davacaritei@yahoo.com
DF.DO.5.02	Forest Genetics and Tree Breeding	**3**		Liviu Fărtăiș: fartaisliviu@yahoo.com
DS.DO.5.03	Wood Study	**4**		Cătălin Roibu: catalin_roibu@yahoo.com
DD.DO.5.04	Silviculture	**5**		Radu Cenușă: raducenusa@usv.ro , Ionuț Barnoaiea: ibarnoaie@usv.ro
DD.DO.5.05	Forest Entomology	**3**		Dana Lupăștean: lupastean@usv.ro
DD.DO.5.06	Afforestation	**3**		Ciprian Palaghianu: cpalaghianu@usv.ro Cătălina Barbu: barbu_catalina2003@yahoo.com
DS.DO.5.07	Watershed management and Torrents control	**4**		Ioan Ciornei: ioanciornei@usv.ro
DD.DO.5.08	Forest transportation systems	**4**		Dan Zarojanu: zarojanu@usv.ro

Code	Courses	ECTS credits		Contact person / e-mail
		Autumn	Spring	
3rd year, 2nd Semester				
DD.DO.6.04	Silviculture		**5**	Radu Cenușă: raducenusa@usv.ro Liviu Nichiforel: nichiforel@usv.ro
DD.DO.6.05	Forest Entomology		**3**	Dana Lupăștean: lupastean@usv.ro Leonard Duduman: mduduman@gmail.com
DD.DO.6.06	Afforestation		**4**	Ciprian Palaghianu: cpalaghianu@usv.ro Cătălina Barbu: barbu_catalina2003@yahoo.com
DS.DO.6.07	Watershed management and Torrents control		**4**	Ioan Ciornei: ioanciornei@usv.ro
DD.DO.6.08	Forest transportation systems		**4**	Dan Zarojanu: zarojanu@usv.ro
DD.DO.6.09	Forest management planning I		**4**	Gabriel Duduman: gduduman@usv.ro
DS.DO.6.10	Landscape architecture and forest design		**3**	Georgel Mazăre: george_mazare@yahoo.com
DS.DO.6.11	Internship		**3**	
4th year, 1st Semester				
DD.DO.7.01	Forest management planning II	**5**		Gabriel Duduman: gduduman@usv.ro
DS.DO.7.02	Forest monitoring	**4**		Dana Lupăștean: lupastean@usv.ro
DD.DO.7.03	Game management and Salmon culture	**4**		Gabriel Dănilă: gabidanila68@gmail.com
DD.DO.7.04	Forest Harvesting	**4**		Sergiu Horodnic: horodnic@usv.ro
DS.DO.7.05	Primary wood processing	**4**		Marcel Flocea: marcelflocea@yahoo.fr
DD.DO.7.06	Forest Management	**5**		Liviu Nichiforel: nichiforel@usv.ro
DS.DA.7.10	Forest management for private forestland / Research methods in forestry	**2**		Marcel Flocea: marcelflocea@yahoo.fr Leonard Duduman: mduduman@gmail.com
DS.DA.7.11	Fauna particularities in Europe / Forest inventory	**2**		Gabriel Dănilă: gabidanila68@gmail.com Daniel Avăcăriței: davacaritei@yahoo.com
DS.DL.7.13	Business contracts in forest management	**2**		Laura Bouriaud: bouriaud@usv.ro
4th year, 2nd Semester				
DD.DO.8.03	Game management and Salmon culture		**4**	Gabriel Dănilă: gabidanila68@gmail.com
DD.DO.8.04	Forest Harvesting		**3**	Sergiu Horodnic: horodnic@usv.ro
DS.DO.8.05	Primary wood processing		**3**	Marcel Flocea: marcelflocea@yahoo.fr
DD.DO.8.06	Forest Management		**4**	Marian Drăgoi: dragoi@usv.ro
DD.DO.8.07	Remote sensing and photogrammetry		**5**	Ionuț Barnoaiea: ibarnoaie@usv.ro
DS.DO.8.08	Forest law and regulation		**5**	Laura Bouriaud: bouriaud@usv.ro
DC.DA.8.12	Ergonomics and labor protection / Environmental Conflict Management		**2**	Gabriel Dănilă: gabidanila68@gmail.com Liviu Nichiforel: nichiforel@usv.ro
DS.DL.8.14	Tree Gardening		**2**	Georgel Mazăre: george_mazare@yahoo.com
DS.DO.8.09	Internship/Elaboration of final thesis		**4**	

A.2.1. List of courses Ecology and Environment Protection Programme: 2017-2018

Undergraduate level / BSc Programme Environment Protection Programme				
Code	**Courses**	**ECTS credits**		**Contact person / e-mail**
		Autumn	**Spring**	
1st year, 1st Semester				
DF.01.01	Plant biology	**6**		Cezar Tomescu / tomcezar@yahoo.com
DF.01.02	Animal biology	**6**		Corneliu Pohonțu / profuldebio@yahoo.com
DF.01.03	Physical and Human geography	**6**		Dinu Oprea / dinuo@atlas.usv.ro
DC.01.04	Mathematics	**5**		Angela Paicu / paicu@usv.ro
DF.01.05	Meteorology and Climatology	**4**		Cătălin Roibu / catalin_roibu@yahoo.com
DC.01.06	French class / English class	**3**		Crina Coroi / crinacoroi@litere.usv.ro Daniela Marțole / danielamartole@litere.usv.ro
DC.02.13	Sports	**0**		Virgil Larionescu / virgill@usv.ro
1st year, 2nd Semester				
DC.02.07	Informatics		**3**	Ciprian Palaghianu / cpalaghianu@usv.ro
DS.02.08	Vegetal taxonomy		**5**	Cezar Tomescu / tomcezar@yahoo.com
DS.02.09	Animal taxonomy		**3**	Corneliu Pohonțu / profuldebio@yahoo.com
DF.02.10	Physics of environment		**5**	Petru Știucă / pstiuca@fim.usv.ro
DF.02.11	Environmental chemistry		**5**	Marian Rîșca / risca@usv.ro
DC.02.12	French class / English class		**2**	Crina Coroi / crinacoroi@litere.usv.ro Daniela Marțole / danielamartole@litere.usv.ro
DC.02.14 / DC.02.15	Ethics of environment / Public communication		**5**	Rodica Iacobescu / roiacobescu@yahoo.fr
DC.02.13	Sports		**2**	Virgil Larionescu / virgill@usv.ro
2nd year, 1st Semester				
DF.03.01	Environment Geology	**5**		Daniela Popescu / danys@atlas.usv.ro
DS.03.02	Vegetal and animal ecophysiology	**4**		Cătălina Barbu / barbu_catalina2003@yahoo.com
DS.03.03	Biostatistics	**3**		Sergiu Horodnic / horodnic@usv.ro
DF.03.04	Biochemistry	**5**		Marian Rîșca / risca@usv.ro
DF.03.05	Soil Science	**5**		Alexei Savin / alexeisavin@gmail.com
DC.03.06	French class / English class	**3**		Crina Coroi / crinacoroi@litere.usv.ro Daniela Hăisan / daniella.haisan@gmail.com
DS.03.14 DC.03.15	Population Ecology / Landscape Ecology	**5**		Gabriel Dănilă / gabidanila68@gmail.com Ciprian Palaghianu / cpalaghianu@usv.ro
DS.03.18	Phytosociology and Romanian vegetation	**2**		Cezar Tomescu / tomcezar@yahoo.com
2nd year, 2nd Semester				
DS.04.07	Genetic Ecology		**3**	Liviu Fărtăiș / fartaisliviu@yahoo.com
DF.04.08	General Ecology		**5**	Anca Măciucă / ancam@usv.ro
DF.04.09	Geography of environment		**4**	Valeria Ditoiu / vditoiu@yahoo.com
DC.04.10	GIS / Geographic Information Systems		**5**	Ionuț Barnoaiea / ibarnoaie@usv.ro
DS.04.11	Microbiology		**3**	Margareta Grudnicki / margaretag@usv.ro
DC.04.16 DS.04.17	Natural hazards and risk Hydrobiology		**5**	Ioan Ciornei / ioanciornei@usv.ro Margareta Grudnicki / margaretag@usv.ro
DC.04.12	French class / English class		**2**	Crina Coroi / crinacoroi@litere.usv.ro Daniela Hăisan / daniella.haisan@gmail.com
DS.04.13	Internship		**3**	
3rd year, 1st Semester				
DF.05.01	Impact Study Methodology	**5**		Corneliu Pohonțu / profuldebio@yahoo.com
DF.05.02	Pollution and Environmental Protection	**5**		Leonard Duduman / mduduman@gmail.com
DF.05.03	Environmental Economics	**5**		Marian Drăgoi / dragoi@usv.ro
DF.05.04	Restoration Ecology	**5**		Ciprian Palaghianu / cpalaghianu@usv.ro
DF.05.05	Environmental Law	**5**		Laura Bouriaud / bouriaud@usv.ro
DF.05.13	Ecosystem dynamics	**5**		Georgel Mazăre / george_mazare@yahoo.com
DF.05.14	Management of protected areas	**5**		Georgel Mazăre / george_mazare@yahoo.com

Code	Courses	ECTS credits		Contact person / e-mail
		Autumn	Spring	
3rd year, 2nd Semester				
DS.06.06	Global Environmental Changes		**3**	Roibu Cătălin / catalin_roibu@yahoo.com
DS.06.07	Ecotoxicology		**3**	Corneliu Pohonțu / profuldebio@yahoo.com
DS.06.08	Integrated pest control		**3**	Leonard Duduman / mduduman@gmail.com
DS.06.09	Environmental Monitoring		**3**	Leonard Duduman / mduduman@gmail.com
DS.06.10	Human Ecology		**3**	Corneliu Pohonțu / profuldebio@yahoo.com
DF.06.11	Legislation, policies and strategies		**2**	Laura Bouriaud / bouriaud@usv.ro
DC.06.15 DS.06.16	Remote Sensing Ecological Processes Modeling		**5**	Ionuț Barnoaiea / ibarnoaie@usv.ro Marian Drăgoi / dragoi@usv.ro
DC.06.17 DC.06.18	Waste management Environmental Conflict Management		**5**	Marian Drăgoi / dragoi@usv.ro Liviu Nichiforel / nichiforel@usv.ro
DS.06.12	Preparation of the Graduation Thesis		**3**	Professor Coordinator

B.1.1. List of courses MSc Biodiversity Conservation and Ecosystem Management: 2017-2018

MSc BIODIVERSITY CONSERVATION AND ECOSYSTEM MANAGEMENT				
Code	**Courses**	**ECTS credits**		**Contact person / e-mail**
		Autumn	**Spring**	
1st year, 1st Semester				
DSI.01.01	Biodiversity Conservation	**5**		Anca Măciucă / ancam@usv.ro
DSI.01.02	Evaluation and conservation of forest genetic resources	**6**		Liviu Fărtăiș / fartaisliviu@yahoo.com
DSI.01.03	Integrated management of forest resources	**7**		Leonard Duduman / mduduman@gmai.com
DAP.01.04	Fungal diversity in forest ecosystems	**5**		Margareta Grudnicki / margaretag@usv.ro
DAP.01.09	Diversity and chorology of wooden species	**7**		Florin Clinovschi / clinovsc@fim.usv.ro
DAP. 01.10	Biodiversity source of natural compounds with practical uses			Marian Rîșca / risca@usv.ro
1st year, 2nd Semester				
DSI.01.05	Methods for evaluation the populations of plants and animals		**4**	Gabriel Dănilă / gabidanila68@yahoo.com
DAP.02.06	Geo-Information Systems (GIS)		**5**	Ionuț Barnoaiea / ibarnoaie@usv.ro
DAP.02.07	Forest and chain of custody certification		**6**	Anca Măciucă / ancam@usv.ro
DSI.02.08	Pollution influence on physiological processes in plants		**4**	Margareta Grudnicki / margaretag@usv.ro
DSI.02.11	Applied statistics		**5**	Ciprian Palaghianu / cpalaghianu@usv.ro
DSI. 02.12	Habitats typology and conservation			Georgel Mazăre / george_mazare@yahoo.com
DAP.02.13	Rehabilitation of disturbed ecosystems		**6**	Dan Zarojanu, zarojanu@usv.ro Alexei Savin /alexeisavin@gmail.com
DAP. 02.14	Plants biosemiotics			Marian Rîșca / risca@usv.ro
2nd year, 1st Semester				
DSI.03.15	Dynamics of natural ecosystems	**6**		Radu Leontie Cenușă / raducenusa@usv.ro
DSI.03.16	Landscape Ecology and Management	**6**		Ciprian Palaghianu / cpalaghianu@usv.ro
DAP.03.17	Management of protected areas	**6**		Georgel Mazăre / george_mazare@yahoo.com
DAP.03.18	Integrated Pest Control	**5**		Dana Lupăștean / lupastean@usv.ro
DAP.03.22	Dendrocronology	**7**		Ionel Popa / popaicas@gmail.com
DAP.03.22	Ecosystem services management			Marian Drăgoi / dragoi@usv.ro
2nd year, 2nd Semester				
DSI.04.19	Project Management		**5**	Leonard Duduman / mduduman@gmail.com
DSI.04.20	Research and documentation		**15**	Student
DSI.04.21	Elaboration of the dissertation research project		**10**	Professor Coordinator

B.2.1. List of courses MSc Management of Forestry Activities Programme: 2017-2018

MSc MANAGEMENT OF WOOD HARVESTING AND WOOD PROCESSING ACTIVITIES				
Code	**Courses**	**ECTS credits**		**Contact person / e-mail**
		Autumn	**Spring**	
1st year, 1st Semester				
DSI.01.01	Particularities of forest management	**6**		Laura Bouriaud / bouriaud@usv.ro
DSI.01.02	Decision making process	**5**		Gabriel Duduman / gduduman@usv.ro
DSI.01.03	Integrated management of forest resources	**7**		Leonard Duduman / mduduman@gmail.com
DAP.01.04	Organization of wood-processing activities	**7**		Maria Pentilescu / mariapenti@yahoo.com
DAP.01.05	Human resources management	**5**		Laura Bouriaud / bouriaud@usv.ro
1st year, 2nd Semester				
DSI.02.06	Wood market and forest economics		**7**	Marian Drăgoi: dragoi@usv.ro Liviu Nichiforel: nichiforel@usv.ro
DAP.02.07	Strategy of the forestry companies		**5**	Laura Bouriaud / bouriaud@usv.ro
DAP.02.08	Environmental-friendly logging technologies		**7**	Sergiu Horodnic / horodnic@usv.ro
DAP.02.09	Forest and chain of custody certification		**6**	Anca Măciucă / ancam@usv.ro
DAP 02.10	Entrepreneurship and innovation			Laura Bouriaud / bouriaud@usv.ro
DAP.02.11	Life cycle assessment		**7**	Marian Drăgoi / dragoi@usv.ro
DAP 02.12	Geo-Information Systems			Ionuț Barnoaiea / ibarnoaie@usv.ro
2nd year, 1st Semester				
DAP.03.13	The Flow of Company Information	**5**		Ionel Popa / popaicas@gmail.com
DSI.03.14	Management of forest investments	**5**		Vasile Rusu
DSI.03.16	Forest products marketing	**6**		Liviu Nichiforel / nichiforel@usv.ro
DAP.03.17	Statistical analysis of technological processes	**7**		Sergiu Horodnic / horodnic@usv.ro
DAP.03.18	Complex watershed management			Ioan Ciornei / ioanciornei@usv.ro
DSI.03.22	Quality management of forest products	**7**		Marian Drăgoi / dragoi@usv.ro
DSI.03.15	Specific software in wood harvesting and wood industry			Gabriel Duduman / gduduman@usv.ro
2nd year, 2nd Semester				
DSI.04.19	Project Management		**5**	Leonard Duduman / mduduman@gmail.com
DSI.04.20	Research and documentation		**15**	Student
DSI.04.21	Elaboration of the dissertation research project		**10**	Professor Coordinator

A.1.2. Description of courses Silviculture Programme: 2017-2018

1st year

DF.DO.1.01	***Chemistry-Biochemistry***	
Autumn / 1	3 hours per week, 1st semester: 28 Lectures / 14 labs	ECTS credits: 4
The biochemistry studies the living matter from a chemical point of view. It offers the premises to understand and assimilate other biological sciences as physiology, genetics, ecology, etc. From a molecular point of view the living organisms possess a specific chemical structure able to sustain the manifestation of life: data exchange with the environment, becoming and reproduction. The biochemistry studies these molecular structures and the interactions between them. A branch of the biochemistry that studies the molecular structures and the relationship between these structures in the plants are the plant biochemistry.		
DF.DO.1.02	***Physics-Biophysics***	
Autumn / 1	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 4
Biological processes cannot be completely understood without a thorough knowledge on the structure of matter, phenomena and physical law. A competent engineer who studies world trees and plants can be measured from this point of view.		
DF.DO.1.03	***Descriptive geometry***	
Autumn / 1	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 5
It is intended to introduce the student of forestry engineering on the basic principles of technical drawing, using the more common elements of the drawing. The students may identify clearly all the necessary elements for technical drawing, acquiring the basic knowledge to perform and correctly interpret all kinds of necessary plans for their future professional development (know and apply the romanian/european rule in the implementation of technological drawing		
DD.DO.1.04	***Informatics***	
Autumn / 1	2 hours per week, 1st semester: 0 Lectures / 28 labs	ECTS credits: 4
The Informatics Course presents general information concerning computers and their utilisation. The main operating systems and data processing software applications are presented. At the same time the hardware concepts and elements are exposed. The final section of the course gives students the opportunity to understand the most important elements of internet – web design using HTML, search engines, optimization rules. The objectives of the lab applications are: informatics key concepts and terms acquiring and achieving specific abilities on using spreadsheets, research techniques and Internet.		
DF.DO.1+2.05	***Forest Botany***	
Autumn / 1 Spring / 1	4 hours per week, 1st semester: 28 Lectures / 28 labs 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5+5

During a semester, the main species of plants are studied beginning with the major functional and structural unit of the living world, which is cell, continuing with plant tissues and then with the root, the stem, the leaves, flowers, fruits and seeds. Laboratory work allows students to fathome, by means of the microscope, the amazing and unseen world of plant tissues. Plants classification in a universal system always has challenged the biologists. Students have the opportunity of studying plant taxonomy from algae, mosses and ferns to the higher plants, which are gymnosperms and angiosperms. The rich herbarium material of the faculty collection and field trips will best illustrate theoretical concepts of this subject.		
DF.DO.1+2.06	***Land surveying and geodesy***	
Autumn / 1 Spring / 1	4 hours per week, 1st semester: 28 Lectures / 28 labs 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5+5
The two interconnected subjects dea with the land measurement. The courses and practical activities aim at introducing the students to specific issues related to measuring and processing of topographic elements and graphical representation of land areas. These operations, approached in the classes of the subject, are done using the latest land surveying instruments, processing and mapping software on the market. These two subjects, along with another pair of disciplines taught two years later (remote sensing, cadastre, GIS) provide to the young engineers the competences to work as specialists in land surveying, as an alternative job.		
DF.DO.2.07	***Mathematics***	
Spring / 1	4 hours per week, 2nd semester: 28 Lectures / 28 seminars	ECTS credits: 4
The course on higher mathematics deals with an introduction on linear spaces, some basic notions on analytical geometry, as well as the main results from differentials and multiple integrals. The course is structured on the idea of an easy learning process for an easy plugging into other technical subjects.		
DS.DO.2.08	***The history of forests***	
Spring / 1	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 2
This subject is an introduction into forestry, showing different approaches on forests: from the role played by forests and wood for the material and spiritual evolution of the mankind to the current extent and importance of forest resources at national, European and global level. Important issues regarding the multifunctional forests and their nowadays growing importance are also approached. The evolution in time of property rights, forest regulation and forest management in our country is also analysed.		
DF.DO.2.09	***Plant physiology***	
Spring / 1	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 4
Regarding the wooden plant physiology, we aim at studying fundamental physiological processes, insisting on the physiologic regulation of uptake, photosynthesis, transpiration, respiration, influences of environmental factors on physiological processes and the bioaccumulation mechanism. An important role is asigned to the pollution that changes the functional parameters of physiological processes in wooden plants.		
DS.DO.2.10	***Mechanics and strength of materials***	
Spring / 1	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 4

This course provides knowledge on strength of materials, which is essential to any graduate from an engineering faculty, with applicability to forest engineering. Similar courses are met in the syllabus of all prestigious technical faculties where forest engineering degree is achieved. The main course objectives include models and general computing methods used in designing the structures and elements from applications specific to forest engineering.		
DC.DO.1+2.11	***French language***	
Autumn / 1 Spring / 1	2 hours per week, 1st semester: 0 Lectures / 28 seminars 2nd semester: 0 Lectures / 28 seminars	ECTS credits: 3+3
Students resume a large amount of the linguistic knowledge accrued in high school and add up new lexical elements and grammatical structures typifying the French language.		
DC.DO.1+2.11	***English language***	
Autumn / 1 Spring / 1	2 hours per week, 1st semester: 0 Lectures / 28 seminars 2nd semester: 0 Lectures / 28 seminars	ECTS credits: 3+3
During their English seminars offered in the first two years of study, Forestry students are gradually introduced to the specialized terminology of sylviculture (ecology and environment included), with a special emphasis on general English as well, so as to achieve a better command of the language in all four skills (listening, speaking, reading, writing).		
DC.DA.1+2.12	***Sports***	
Autumn / 1 Spring / 1	2 hours per week, 1st semester: 0 Lectures / 14 sessions 2nd semester: 0 Lectures / 14 sessions	ECTS credits: 0+3
The goal of this course is to improve the physical skills and to acquire resistance and harmonious development of body.		

2nd year

DF.DO.3.01	***Biostatistics***	
Autumn / 2	3 hours per week, 1st semester: 28 Lectures / 14 labs	ECTS credits: 4
The course aims at developing students' ability to observe, to investigate and to interpret in an objective manner the phenomena and biological processes through the methods of mathematical statistics. The practical applications aim to use the basic procedures and specific terms of biostatistics and also to follow a sequence of particular stages for computing and synthesizing the data in Microsoft Excel. It will emphasize on the manner of interpretation of statistical analysis results for a set of experimental data.		
DD.DO.3.02	***Phythopatology***	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 5
The Forest Phytopathology course addresses a number of issues concerning the biology and ecology of phytopathogenic agents in relation to the diseases they produce in woody plants. In this context, special intention is given to mechanism of spreading infection, incubation of pathogens and specific symptoms that manifest the disease process. An important role is given to the knowledge and quantification of damages caused by phytopathogens and to the agents preventing and controlling diseases.		

DD.DO.3.03	***Soil science***	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits:5
Soil science deals with of the process of soil formation and studies the main properties of different types of soils as long as the conditions within these soils are being created and modified.The objectives are: acquiring the elements of geology (minerals and rocks) necessary for Soil science discipline; study the main factors of soil formation (relief, climate, rocks, vegetation) and soil formation processes (weathering, alteration); knowledge the main physical and chemical properties of soil; analysis of the soil profile and acquiring key horizons (layers) of soil; knowledge of the main classification systems in the world and acquiring the Romanian system of soil taxonomy.		
DD.DO.3+4.04	***Dendrology***	
Autumn / 2 Spring / 2	4 hours per week, 1st semester: 28 Lectures / 28 labs 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5+4
Dendrology is the science concerned with identification, description and analysis of forest woody species - trees, shrubs - the morphology, ecology and their spread.		
DF.DO.3+4.05	***Forest ecology and climatology***	
Autumn / 2 Spring / 2	4 hours per week, 1st semester: 28 Lectures / 28 seminars 2nd semester: 28 Lectures / 28 seminars	ECTS credits: 5+4
The key concept in ecology is the ecosystem. The ecosystems structure, function and dynamic are studied, with a special concern on the forest ecosystem characteristics. To this purpose information about species population, about intra and interrelations in biocenosis, about connections between animal and vegetal species and their environment, about adaptations, about environmental factors dynamic and it's ecological effects are offered. The ecosystems degradation and the possibilities to conserve nature and to protect the environment in our changing world are also studied.		
DF.DO.4.06	***Forest Genetics and Tree Breeding I***	
Spring / 2	3 hours per week, 2nd semester: 28 Lectures / 14 labs	ECTS credits: 4
The main issues tackled in this course are:Mendel and Morgan theories; the study of the main elements of the molecular genetics, the biochemical structure of genes and implication in the fundamental biological processes (genetic transcription, genetic translation and DNA self duplication); the study of the mutagenesis process – classification criteria and mutagen factors; notions and elements of the forest population genetics; the forest genetic improvement using the selection; genetics and methodological limits; the hybridization – a classical method utilised in the forest genetic improvement programmes; methods and techniques; the androsterility phenomenon; mutagenesis and the polyploidy levels induction in the forest genetic improvement activity; the main unconventional methods utilised in the forest genetic improvement; biotechnologies based on molecular markers, biotechnologies based on vegetative propagation and genetic modification of forest trees; forest genetic resources – evaluation, management, „in situ" and „ex situ" conservation of the genetic diversity of the European forests.		
DS.DO.4.07	***Soils and forest sites***	
Spring / 2	4 hours per week, 2nd semester: 28 Lectures / 28 seminars	ECTS credits: 4

Forest site is an aggregate of conditions (geological, geomorphological, climatic) necessary for the increase of forest vegetation, but also an area defined by these conditions. *The objectives are: understanding the main ecological factors of the forest sites; knowledge of the main bioclimatical levels in Romania; description of the main units of forest sites on the country; knowledge of evolution dynamics forest sites.*		
DD.DO.4.08	***Soil mechanics and forestry construction***	
Spring / 2	3 hours per week, 2nd semester: 28 Lectures / 14 labs	ECTS credits: 3
This course deals with the main issues of earth mechanics, namely the manner in which the earth behaves when it is used as construction material or support for new buildings. In addition to that, the students are thought about the basic concepts of wooden houses.		
DD.DO.4.09	***Dendrometry I***	
Spring / 2	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 4
The subject pursues the following goals to define the basic concepts and notions used for assessing the forest resources; appropriate use of terms used in this field, symbols and units of measure employed in assessing the biometric features of trees and stands; to understand the natural laws of growth, applied to forest trees; theoretical background of assessment methods; appropriate usage of the multiple ways to assess the biometric parameters, meant to stimulate creativity; practical utilization of the methods taught at this course.		
DC.DO.3+4.10	***French language II***	
Autumn / 2 Spring / 2	2 hours per week, 1st semester: 0 Lectures / 28 seminars 2nd semester: 0 Lectures / 28 seminars	ECTS credits: 2+2
Students resume a large amount of the linguistic knowledge accrued in high school and add up new lexical elements and grammatical structures typifying the French language.		
DC.DO.3+4.10	***English language II***	
Autumn / 2 Spring / 2	2 hours per week, 1st semester: 0 Lectures / 28 seminars 2nd semester: 0 Lectures / 28 seminars	ECTS credits: 2+2
During their English seminars offered in the first two years of study, Forestry students are gradually introduced to the specialized terminology of sylviculture (ecology and environment included), with a special emphasis on general English as well, so as to achieve a better command of the language in all four skills (listening, speaking, reading, writing).		
DS.DO.4.12	***Internship***	
Spring / 2	3 weeks	ECTS credits: 3
DC.DA.3+4.11	***Sports***	
Autumn / 2 Spring / 2	2 hours per week, 1st semester: 0 Lectures / 14 sessions 2nd semester: 0 Lectures / 14 sessions	ECTS credits: 0+2
The goal of this course is to imprive the physical skills and to acquire resistance and harmonious development of studentsţ bodies.		
DC.DA.3.13a	***Phylosophy***	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 4

The course on philosophy, through the themes approached, makes the students think on the complexity of nature and human condition, to understand which are the opportunities and boundaries of knowledge, which is the relationship between the nature and culture, which are the values worth to believe in. Studying some philosophical texts the students have the opportunity to think over and to debate, on arguments, conceptions the stamp the mankind evolution. In the world of Sophia there are a great deal of questions, but no thorough or absolute answer, Herein what does it matter is the capacity to think, to come up with problems and, no doubt, to analyse and render the mysteries of the outside and inside worlds.

DC.DA.3.13b	***Public Communication***	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 4
Communication course is focused on a fundamental dimension of the human being, that is the capacity to communicate verbally, non-verbally and para-verbally. Students learn the secret of a genuine and effective communication, how to overcome the deadlocks that often occur in interpersonal communication, how to approach non-communicative persons or difficult persons. The bargaining techniques will also help the students to solve the conflicts, either personal or professional. Learning the power of words and gesture as well as the power of personal presence, the students will be effectively supported in further speaches they have to give or in producing good presentations, during their studentship or further in their professional life. In addition to that, they will learn different manipulation techniques, worth for assessing further decisions they have to make.		

3rd year

DD.DO.5.01	***Dendrometry II***	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 4
The main techniques and auxological procedures are presented, for both individual trees and stands of trees. The course is also focused on presenting the relationship between growing processes, the site condition and stand productivity, considering also the altering factors. The subject provides knowledge for tackling practical problems on assessing the forest resources, applicable in other forest-related subjects.		
DF.DO.5.02	***Forest Genetics and Tree Breeding II***	
Autumn / 3	3 hours per week, 1st semester: 28 Lectures / 14 labs	ECTS credits: 3
The main issues tackled in this course are:Mendel and Morgan theories; the study of the main elements of the molecular genetics, the biochemical structure of genes and implication in the fundamental biological processes (genetic transcription, genetic translation and DNA self duplication); the study of the mutagenesis process – classification criteria and mutagen factors; notions and elements of the forest population genetics; the forest genetic improvement using the selection; genetics and methodological limits; the hybridization – a classical method utilised in the forest genetic improvement programmes; methods and techniques; the androsterility phenomenon; mutagenesis and the polyploidy levels induction in the forest genetic improvement activity; the main unconventional methods utilised in the forest genetic improvement; biotechnologies based on molecular markers, biotechnologies based on vegetative propagation and genetic modification of forest trees; forest genetic resources – evaluation, management, „in situ" and „ex situ" conservation of the genetic diversity of the European forests.		
DS.DO.5.03	***Wood study***	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 4

The wood study lectures and laboratory presents the mechanisms involved in producing and accumulating the wooden mass, the physical and mechanical properties of wood as a rough material for wood industry and construction, as well as the influences brought by natural and silvicultural factors onto the wood characteristics.		
DD.DO.5+6.04	***Silviculture***	
Autumn / 3 Spring / 3	4 hours per week, 1st semester: 28 Lectures / 28 labs 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5+5
Silviculture is a subject extended on two semesters, consisting in courses and laboratory activities, with semestrial exams. It comprises two distinct parts: silvobiology and silvotehnics. Silvobiology is based on the knowledge forest ecosystem structure and function. The future forestry engineer will learn knowledge to allow him to forest structure diagnosis and the characterization of the main ecosystem processes that ensure forest existence and function, in regards to biomass production, ecoprotective, social and biopatrimonial. Silvotechnics is the part of the subject with an important practical aspects that imprints on the future specialist the aptitudes needed for design, appliance and control of forest regeneration, tending and management.		
DD.DO.5+6.05	***Forest Entomology***	
Autumn / 3 Spring / 3	3 hours per week, 1st semester: 28 Lectures / 14 labs 4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 3+3
The course provides basic information for the determination of the important insect species damaging trees, on the life cycle, the interactions influencing the population level, the outbreak prevention and vegetation loss limitation. Students acquire abilities to identify the important forest insects and their damaging effects and to initiate control measures.		
DD.DO.5+6.06	***Afforestation***	
Autumn / 3 Spring / 3	3 hours per week, 1st semester: 28 Lectures / 14 labs 4 hours per week, 2nd semester : 28 Lectures / 28 labs	ECTS credits: 3+4
The Afforestation course is structured on three parts: seeds, nurseries and afforestation. The first section consists in: characteristics of the tree fruition, evaluation and prognosis of fruition, seeds quality control techniques, fruit and cone processing techniques. The second part consists in: nursery site selection, nursery activities, tools and mechanisms, characteristics of forest species culture. The lat section refers to: afforestation categories, tree species selection, ground and soil preparation, direct seeding and planting techniques, rehabilitation of non-productive lands and stands. Students must work on an afforestation project in order to pass the exam at the end of the second semester.		
DS.DO.5+6.07	***Watershed management and Torrents control***	
Autumn / 3 Spring / 3	3 hours per week, 1st semester: 28 Lectures / 14 labs 2nd semester: 14 Lectures / 28 labs	ECTS credits: 4+4
The contents of the course and practical training are aiming at getting appropriate knowledge and skills necessary in torrential watershed management This course is concerned with hydraulic engineering works for torrent control and biological watershed rehabilitation works. Torrent control has a crucial place in the rehabilitation and protection of mountain areas and entails biological, structural and socio-economic measures.		

DD.DO.5+6.08	***Forest transportation systems***	
Autumn / 3 Spring / 3	3 hours per week, 1st semester: 28 Lectures / 14 labs 4 hours per week 2nd semester: 28 Lectures / 28 labs	ECTS credits: 4+4
This subject deals with various means of transportation used in forestry, the most important ones being the forest roads. Students are taught how to design a forest road and, in addition to this knowledge, they are also taught about skylines and narrow gage train transportation.		
DD.DO.6.09	***Forest management planning I***	
Spring / 3	4 hours per week, 2nd semester: 28 Lectures / 28 seminars	ECTS credits: 4
This subject molds the capacities needed in long-term forest planning, including the knowledge on assessing the allowable cut and all other environmental, social and economic challenges the forest management has to face with. Forest management planning synthesizes all subjects related more or less to forest and forestry and the forest planner is able to foresee, after a couple of years of field work, the yield of a forest and she/he can also recommend the most suitable works needed to be carried out. The first semester is dedicated to acquire the methodological concepts and technical words as well as other skills needed to mold the forest ecosystem in sensible figures like average growth and yield tables.		
DS.DO.6.10	***Landscape architecture and forest design***	
Spring / 3	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 3
During two semesters, this subject studies elements of garden history, notions concerning green spaces functionality, styles and genres characteristic of different green spaces types. There are also characterized all green spaces, depending on the size, role, structure and criteria of selection wood species (trees, shrubs and vines), flowers and the grass species used for turf. A small chapter covers briefly also the construction of green spaces.		
DS.DO.6.11	***Internship***	
Spring / 3	3 weeks	ECTS credits: 3

4th year

DD.DO.7.01	***Forest management planning II***	
Autumn / 4	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5
During the second semester of this course the students get accustomed with advanced knowledge about the impact of climate changes upon the forests, the Natural 2000 networks and its impact on forest management as well as the international legal framework and conventions on biodiversity conservation. A brief introduction in assessing the ecosystem services is also provided for having a better coordination with the forest economics subject.		
DS.DO.7.02	Forest monitoring	
Autumn / 4	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 4

The course provides information regarding the forest monitoring as a component of the integrated environment monitoring, the forest survey networks, the methodology for forest soil and vegetation survey, the multiannual results regarding the forest vegetation and soil evolution, the effects of stress factors on forests, the evolution of the national forest resources size and the structure. Also, there are mentioned the applications of the forest monitoring activity for a sustainable development of forest ecosystems.		
DD.DO.7+8.03	***Game management and Salmoniculture***	
Autumn / 4 Spring / 4	3 hours per week, 1st semester: 28 Lectures / 14 labs 2nd semester: 28 Lectures / 14 labs	ECTS credits: 4+4
The course presents the game species in Romania and the game habitat. The hunting methods are presented in detail for each species separately, with the participation in hunting activities. The course also lays stress on the ways in which the game is taken care of and on the economic benefits that result from this activity. The legislative aspects are also very important and they are presented in the course.		
DD.DO.7+8.04	***Forest harvesting***	
Autumn / 4 Spring / 4	3 hours per week, 1st semester: 28 Lectures / 14 labs 2 hours per week, 2nd semester: 14 Lectures / 14 labs	ECTS credits: 4+3
The main objective is the presentation and assimilation of the basic concepts on the passing stages of wood through a series of technological processes sorted out in harvesting, logging and transport to users. A detailed analysis of the wood production process is carried out, specifying the methods and equipments used in our country and worldwide. The practical applications aim at forming the required capabilities for designing, seazing and managing the technological processes of wood exploitation.		
DS.DO.7+8.05	***Primary wood processing***	
Autumn / 4 Spring / 4	3 hours per week, 1st semester : 28 Lectures / 14 labs 2 hours per week, 2nd semester : 14 Lectures / 14 labs	ECTS credits: 4+3
Wood processing is the main topic of this course and it covers all procedures needed to be carried out in order to transform the rough wooden material into different types of semifinished products, such as lumber, parquets, boards, wooden frames, veneers, plywood, beams, laminated veneer lumber, and paralled strand lumber and so forth.		
DD.DO.7+8.06	***Forest Management***	
Autumn / 4 Spring / 4	3 hours per week, 1st semester: 28 Lectures / 14 labs 2 hours per week, 2nd semester: 14 Lectures / 14 labs	ECTS credits: 5+4
During the first semester students get some basic knowledge on micro-economics, needed to understand how a small economy works. Peculiarities of forest economy are also presented, along with the main market failures. At seminars, in the second semester, students are taught about various systems of assessing the timber prices, while the course is common for both forestry and environment protection student, being focused on basic methods used in assessing the environmental services provided by forest and other natural ecosystems.		
DD.DO.8.07	***Remote sensing and photogrammetry***	

Spring / 4	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5
Remote sensing aims at qualitative and quantitative study of the terrain by using sensors located on air platforms or satellites. GIS (Geographic Information System) is designed to reunite, organize, manage and presente, within adequate software platforms, different geographical information. Cadaster works are oriented towards land registration and land database construction on a national level. Along first year land surveying, these subjects allow the graduates the competences to work as specialists in land surveying, as an alternative job.		
DS.DO.8.08	***Forest law and regulation***	
Spring / 4	4 hours per week, 2nd semester: 28 Lectures / 28 seminars	ECTS credits: 5
The course on Forest law and regulation aims to get students familiar with the functioning of the national juridical and legislative system; to increase their knowledge on forestry substantive and Formal norms, and to give them an appropriate ability for reading, understanding and implementing the forest law. *First part of courses introduces the general elements for understanding the juridical terms and the functioning of the legislative and juridical system, with emphasis on the material and territorial competence of the institutions. The second part defines the principles of forestry law, the main institutions of forestry domain (forest property, administration, the forest management planning), the categories of persons with rights and obligations towards the forest utilization, and underlines the particularities of forest regime as the main method to regulate the forest utilisation. Finally, the third part reminds the content of some regulations in forestry field and details the juridical features of main forestry crimes and contraventions. Within the application work, students will learn how to use the information vaiable on forest law and regulation, and will prepare a synthesis of legal norms of forestry law.*		
DS.DO.8.09	***Internship/Elaboration of final thesis***	
Spring / 4	6 weeks	ECTS credits: 4
DS.DA.7.10	***Forest management for private forestland***	
Autumn / 4	2 hours per week 1st semester: 14 Lectures / 14 seminars	ECTS credits: 2
The lectures aim at forming the future forest engineer for the management of the private forests. Attending this course the students become aware of the problems typifying the small-size, non-industrial private forest ownership. The lectures present also the situation of private ownership on forests in other countries. On particular competence that the lectures aims to form is the capacity to understand the decision making process that is affecting the use and the management of the private forests. As practical applications, the students will work on identifying how the interest of the private forest owners are represented at the national and regional level; how private forest districts were created and how they work; how forest management is organized regarding planning, timber selling, harvesting and withdrawal of other forest products than timber.		
DS.DA.7.10	***Research methods in forestry***	
Autumn / 4	2 hours per week, 1st semester: 14 Lectures / 14 seminars	ECTS credits: 2

This course acquaints the coming specialists with the problems raised by research projects carried out in forestry, from the research typology to the experimental design and writing a scientific report. Students are taught how to conceive a research project starting with the analyzing the logical framework, how to conceive a survey, an experimental design and go through some advanced statistical method used in data processing. The course makes much of the relationship between the goal, the objectives and activities needed to be carried out in order to meet the research objectives, but some qualitative issues are also pinpointed, such as the documentation process, quotation rules, how to use the Internet searching engines and copyright issues as well.		
DS.DA.7.11	***Fauna particularities in Europe***	
Autumn / 4	2 hours per week, 1st semester: 14 Lectures / 14 seminars	ECTS credits: 2
The discipline presents the game habitat and the game species biology in the European fauna. The species in view are others than the Romanian ones. The course presents an elaborate introduction in the European principles of the fauna conservation in concordance with the particularities of each country.		
DS.DA.7.11	***Forest inventory***	
Autumn / 4	2 hours per week, 1st semester: 14 Lectures / 14 labs	ECTS credits: 2
This subject assumes that students are aware about the statistical principles the forest inventory relies on and they are ready to be trained on designing a surveying plan for a given stand or forest. The main sampling techniques are explained along with the needed knowledge for setting up forest surveys at local, regional and national level. The subject gives an insight view on the problems raised by the forest surveying works.		
DC.DA.8.12	***Ergonomics and labor protection***	
Spring / 4	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 2
Ergonomics refers to the knowledge of the human body capacities reported to the labor process and to the environment necessary for carrying out properly the work. The course presents modern organization methods of the work process and the work safety technics at the main work classes in forestry, wood harvesting and transport, but also wood pre-industrialization. First aid measures are also part of the course.		
DC.DA.8.12	***Environmental Conflict Management***	
Spring / 4	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 2
This module provides an alternative approach to the understanding of the interests resulting from forest management. The class targets students who aim to understand the role of non-governmental organizations, the state and private companies in the management of natural resources with a special focus on forest resources. The module integrates one component for the analysis of inter-personal conflicts and between interests groups, having at a final point the familiarization of students with alternative methods for environmental conflict resolution (mediation, facilitation, negotiation, etc).		
DS.DL.7.13	***Business contracts in forest management***	
Autumn / 4	2 hours per week, 1st semester: 14 Lectures / 14 seminars	ECTS credits: 2

The lectures aims to help forest engineer to be better prepare when contracting activities in forest sector. The lectures will familiarize students with the basic rules on contracting (civil and commercial contracts), and will create competences in understanding the way on concluding, performing and terminating contracts. Also, the students will achieve a better capacity how to read and interpret a contractual rule. General knowledge from the civil law on contracts will be presented together with the liability rule and with litigation solving procedures. In the latest part of the lectures and during the applications, the students will work on different types on contracts functioning currently in forestry, such civil and commercial selling contract, administration of forests contract, forest harvesting and services contracts, work contracts.		
DS.DL.8.14	***Tree Gardening***	
Spring / 4	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 2
This subject is meant to familiarize the students with the most important wooden species (trees shrubs, subshrubs and lianas) used for gardening in Romania, with respect to their morphological and ecological trails, as well as from the standing point of their ornamental value. In addition to that students are taught how the saplings are produced on industrial scale.		

A.2.2. Description of courses Ecology and Environment Protection Programme: 2017-2018

1st year

DF.01.01	***Plant biology***	
Autumn / 1	***4 hours per week,*** ECTS credits: 6 ***1st semester: 28 Lectures / 28 labs***	
During a semester, the plants' world is studied beginning with the analysis of functional and structural unit of the living world, cell, continuing with plant tissues and then the root, stem, leaf, flower, fruit and seed. Laboratory work allows students to enter by means of the microscope, in the amazing world unseen of plant tissues.		
DF.01.02	***Animal biology***	
Autumn / 1	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 6
The purpose of the course is the acquisition of basic knowledge concerning external and internal morphology of animal organisms on evolutionary scale. Comparative anatomy contributes to understanding the relationship systems (nervous system and sense organs), digestion (digestion, circulatory, excretory and respiratory systems) and reproductive (sexual organs) and skeleton (exo- and endoskeleton) of major invertebrates and vertebrates phyla. It contributes to awareness the animal unit of multicellular organisms developing (Metazoa) from single-cell organisms (Protozoa). Improvement of external and internal body structures in connection with phylogeny and adaptation to different environments. The course is necessary for the future specialists in environments protection.		
DF.01.03	***Physical and Human geography***	
Autumn / 1	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 6
This course gathers into a complex content of theoretical information and applicative skills the knowledge needed to approach the terrestrial ecosystem. The course is structured into two parts, one for each corresponding sub-systems (physical and human), emphasizing the phenomenology and the processes that typifies the action carried out by the human society. The lecture is an introduction in new analytical concepts, such as the integrated territorial systems, the outcome of geographical landscape, which is the basic unit in ecosystem analysis.		
DC.01.04	***Mathematics***	
Autumn / 1	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5
This course presents some notions about the theory of linear spaces, multiple variable functions, calculus and differential equations. The course is focused on developing some working procedures and algorithms.		
DF.01.05	***Meteorology and Climatology***	
Autumn/ 1	4 hours per week, 2nd semester: 28 Lectures / 28 seminars	ECTS credits: 4
Acquiring knowledge of meteorology and climatology involves orientation of knowledge on two distinct levels such as: one theoretical plan, based on the laws which govern the atmospheric phenomena and their reflection in the sphere of the ecological relationships. The second level of the course is oriented to practical side, such as weather and climate information for capitalizing in the technical and scientific activities. Meteorology and climatology course involves familiarizing of the future specialists in environmental science with necessary technology of collecting meteorological data. Also, the course ensure the knowledge necessary to support the meteorological information of different studies and projects of a scientific and practical character.		

DC.01.06 + DC.02.12	***French language***	
Autumn / 1 Spring / 1	2 hours per week, 1st semester: 28 seminars 2 hour per week, 2nd semester: 28 seminars	ECTS credits: 3+2
Students resume a large amount of the linguistic knowledge accrued in high school and add up new lexical elements and grammatical structures typifying the French language.		
DC.01.06 + DC.02.12	***English language***	
Autumn / 1 Spring / 1	2 hours per week, 1st semester: 28 seminars 2 hour per week, 2nd semester: 28 seminars	ECTS credits: 3+2
During their English seminars offered in the first two years of study, Forestry students are gradually introduced to the specialized terminology of sylviculture (ecology and environment included), with a special emphasis on general English as well, so as to achieve a better command of the language in all four skills (listening, speaking, reading, writing).		
DC.02.07	***Information Technology***	
Spring / 1	2 hours per week, 2nd semester: 14 Lectures / 14 labs	ECTS credits: 3
This course presents the IT basics – the technological fundamentals and information concerning computers and their use. It is focused on achieving knowledge connected to the main topics of computer science along with achieving skills related to computer usage. The main operating systems and specific data processing software applications are presented. The main computer hardware elements are discussed and analysed. The final section of the course is dedicated to the most important elements of internet – web design, search engines, optimization rules, e-mail. The lab applications offer the students the opportunity to achieve specific abilities on using software, research techniques and Internet.		
DS.02.08	***Vegetal taxonomy***	
Spring / 1	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 5
Plants classification in a universal system always has fascinated biologists. Students have the opportunity of studying plant taxonomy from algae, mosses and ferns continuing with the highly evolved plants: gymnosperms and angiosperms. The rich herbarium material, dried plant materials from the faculty collection and field trips will best illustrate theoretical concepts of this subject.		
DS.02.09	***Animal taxonomy***	
Spring / 1	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 3
The course is presenting taxonomic groups (phyla, classes, orders, families and species) of major invertebrates and vertebrates. It emphasizes the study of dangerous organisms that can cause illness, forest and agricultural crop damage (protozoa, worms, arachnids, insects, rodent mammals etc) and measures to limit negative effects. Many animals are known as indicator species of pollution, their identification and knowledge create the basis to limit nuisance's factors. Excessive pollution with fertilizes, pesticides, industrial waste, household etc, change the parameters of environmental health (soil, water, air) with negative consequence, as species extinction or excessive multiplication of others. Animal taxonomy, through lecture and practical (as visits in Animal history museum, forest ecosystems, Black Sea Research Station), contribute to form a good professional specialist in ecology, who understand the role of animal biodiversity.		

DF.02.10	***Physics of environment***	
Spring / 1	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5
Knowledge of the physics of environment includes the laws of physics to understand phenomena and physical environment factors (trees, lakes, oceans, etc.). That can influence the health of people. It has four major components: water, natural vegetation, soil and rock, climate and weather. Knowing these laws can prevent environmental pollution, health insurance so people of planet Earth.		
DF.02.11	***Environmental chemistry***	
Spring / 1	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5
The knowledge of the environment is the premise for the understanding of our world and his laws that governs it, laws to whom we submit too, as inhabitants of our planet. The environmental chemistry studies the chemical components of the atmosphere, hydrosphere and lithosphere, the relationships between these and also the interactions between these spheres and their influence against the biosphere. The ultimate goal is to emphasize the laws that govern the biosphere's integration among the other environmental structures in order to protect the existing natural equilibriums and to reestablish the damaged equilibriums due to anthropic acts.		
DC.02.13	***Sports***	
Autumn / 1 Spring / 1	2 hours per week, 1st semester: 0 Lectures / 14 sessions 2nd semester: 0 Lectures / 14 sessions	ECTS credits: 0+2
The goal of this course is to improve the physical skills and to acquire resistance and harmonious development of body.		
DC.02.14	***Ethics of environment***	
Spring / 1	3 hours per week, 2nd semester: 14 Lectures / 28 seminars	ECTS credits: 5
Having in mind the numerous challenges the mankind is facing with, a new moral conciseness must be shaped in order to understand the mankind commitments with respect to other forms of life, labeled as the "community of terrestrial life". The course talks about the responsibilities needed to undertake by human beings on long term, taking into account the numerous direct and indirect aggressions caused by the human beings.		
DC.02.15	***Public communication***	
Spring / 1	3 hours per week, 2nd semester: 14 Lectures / 28 seminars	ECTS credits: 5
Communication course is focused on a fundamental dimension of the human being, that is the capacity to communicate verbally, non-verbally and para-verbally. Students learn the secret of a genuine and effective communication, how to overcome the deadlocks that often occur in interpersonal communication, how to approach non-communicative persons or difficult persons. The bargaining techniques will also help the students to solve the conflicts, either personal or professional. Learning the power of words and gesture as well as the power of personal presence, the students will be effectively supported in further speaches they have to give or in producing good presentations, during their studentship or further in their professional life. In addition to that, they will learn different manipulation techniques, worth for assessing further decisions they have to make.		

2nd year

DF.03.01	***Environment Geology***	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 5
This course approaches the relationships between Earth and environment, stressing the features concerning the ecological geology.		
DS.03.02	***Vegetal and animal ecophysiology***	
Autumn / 2	3 hours per week, 2nd semester: 28 Lectures / 14 labs	ECTS credits: 4
Ecophysiology involves both the descriptive study of the responses of organisms to ambient conditions and the causal analysis of the corresponding ecologically dependent physiological mechanisms, at every level of organization. The ecophysiological approach must take into account polymorphism in individual responses, which are largely responsible for the adaptive capacity of any given population. In this respect, ecophysiological study yields information which is fundamental for an understanding of the mechanisms underlying adaptive strategies. This course explores the physiological processes that influence the growth, reproduction, survival, adaptation, and evolution of plants. The physiological processes to be discussed include water relations, mineral nutrition, solute transport, and energetics (photosynthesis and respiration). The course will begin with an overview of these physiological processes, emphasizing their fundamental importance to plants and the relevant mechanisms. Having established this foundation, the course will then consider the contribution of these individual mechanisms to plant growth, development, survival, and adaptation. The influence of biotic and abiotic factors will be included to provide a context in which to discuss stress physiology and its ecological consequences for plant adaptation and evolution.		
DS.03.03	***Biostatistics***	
Autumn / 2	3 hours per week, 1st semester: 28 Lectures / 14 labs	ECTS credits: 3
The course aims to develop students' ability to observe, to investigate and to interpret in an objective manner the phenomena and biological processes through methods of mathematical statistics. The practical applications aim to use the basic procedures and specific terms of biostatistics and also to follow a sequence of particular stages for computing and synthesizing the data in Microsoft Excel. It will emphasize on the manner of interpretation of statistical analysis results for a set of experimental data.		
DF.03.04	***Biochemistry***	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 5
The biochemistry studies the living matter from a chemical point of view. It offers the premises to understand and assimilate other biological sciences as physiology, genetics, ecology, etc. From a molecular point of view the living organisms possess a specific chemical structure able to sustain the manifestation of life: data exchange with the environment, becoming and reproduction. The biochemistry studies these molecular structures and the interactions between them.		
DF.03.05	***Soil Science***	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 labs	ECTS credits: 5

Soil science has the purpose study of soil in terms of formation, composition and its properties. The objectives are: acquiring the elements of geology (minerals and rocks) necessary for Soil science discipline; study the main factors of soil formation (relief, climate, rocks, vegetation) and soil formation processes (weathering, alteration); knowledge the main physical and chemical properties of soil, analysis of the soil profile and acquiring key horizons (layers) of soil; knowledge of the main classification systems in the world and acquiring the Romanian system of soil taxonomy.		
DC.03.06 + DC.04.12	***French language***	
Autumn / 2 Spring / 2	2 hours per week, 1st semester: 28 seminars 2 hour per week, 2nd semester: 28 seminars	ECTS credits: 3+2
Students resume a large amount of the linguistic knowledge accrued in high school and add up new lexical elements and grammatical structures typifying the French language.		
DC.03.06 + DC.04.12	***English language***	
Autumn / 2 Spring / 2	2 hours per week, 1st semester: 28 seminars 2 hour per week, 2nd semester: 28 seminars	ECTS credits: 3+2
During their English seminars offered in the first two years of study, Forestry students are gradually introduced to the specialized terminology of sylviculture (ecology and environment included), with a special emphasis on general English as well, so as to achieve a better command of the language in all four skills (listening, speaking, reading, writing).		
DS.04.07	***Genetic Ecology***	
Spring / 2	3 hours per week, 2nd semester: 28 Lectures / 14 labs	ECTS credits: 3
This course on ecological genetics help student understand the mechanisms and principles that support the interactions between the environment and the gene pool, the evolution of natural populations within different ecological niches and the ecosystem steadiness. Knowing and fathoming the main research methods used for analyzing the genetic variability is the main topic the future specialists will deal with, either in common activities or research.		
DF.04.08	***General Ecology***	
Spring / 2	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5
The general ecology is essential for understanding the natural world. The key word of this discipline is the interrelation or connection. The relations between the individuals of a species, between animal and vegetal species, and between species and their natural environment determine the structure, functions and the dynamic of the studied natural ecosystems. Other topics studied are the populations, the terrestrial and aquatic biomes and aspects regarding the ecosystems degradation, the biodiversity loss; the possibilities to prevent and control this degradation, so that the natural environment that sustains the human existence to be protected, are also reviewed.		
DF.04.09	***Geography of environment***	
Spring / 2	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 4

Environmental geography aims at analyzing and describing the relations between different environmental features and shapes the skills needed for understanding the interactions carried out at ecosystem level, according to the laws of zonality and elevation ranging. The problems are structured into three parts: after a concise introductory section where the evolution of the concept of environment is being summarized, the second section deals with the broad spectrum of interactions between atmosphere, hydro-sphere and lithosphere, the last one being the physical support for all geographical processes. The third section deals with the geographical particularities produced by the dynamics of the environment, due to the human activities carried out along the long evaluative stages.		
DC.04.10	***GIS / Geographic Information Systems***	
Spring / 2	4 hours per week, 2nd semester: 28 Lectures / 28 labs	ECTS credits: 5
GIS (Geographic Information System) is the subject that provides to students interested in environmental protection a modern tool to allow them to prepare different land representations and maps of ecosystemic processes in a target area. GIS representations gather specific information about a certain area, with the possibility of organization, combination and representation. GIS is suitable in the most diverse situations that can be encountered in environmental resource management.		
DS.04.11	***Microbiology***	
Spring / 2	2 hours per week, 2nd semester: 14 Lectures / 14 labs	ECTS credits: 3
The apprehension of microorganisms that can be found in each ecosystem, as well as their associations with multicelular organisms is the objective of this discipline. Other aspects which are studied at this discipline are the following ones: Morphological structures, biochemistry, genetics and systematic of microorganisms; The ecology of micro-organisms and the influence of ecological factors that intervene in spreading different disease; The interaction between micro-organisms and biochemical agents, the role played by micro-organisms in the flows of organic matters, carbon, nitrogen, considering their capacity to decompose the organic matter.		
DS.04.13	***Internship***	
Spring / 2	2 weeks	ECTS credits: 3
DS.03.14	***Population Ecology***	
Autumn / 2	2 hours per week, 1st semester: 14 Lectures / 14 seminars	ECTS credits: 5
The course offers the students information regarding the population structure and dynamics, the demographic strategies, the population stability, the population outbreak. It also presents interpretation ways of the population dynamics and the possibilities of using the patterns in the applied ecology.		
DC.03.15	***Landscape Ecology***	
Autumn / 2	2 hours per week, 1st semester: 14 Lectures / 14 seminars	ECTS credits: 5
Landscape ecology is a multidisciplinary new born science. It covers multiple perspectives on very different phenomenon and processes. The landscape is the main object of the study, with all its elements, composition, structure, function or space/time dynamic. The course analyses the fluxes and relationships between ecological processes and ecosystems, land use change, process scale, space variability, support capacity and possibility of landscape conservation or rehabilitation. Landscape Ecology offer an adequate and particular framework for solving real ecological problems regarding planning, conservation, rehabilitation and sustainable/responsible management of the environment.		

DC.04.16	***Natural hazards and risk***	
Spring / 2	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
This subject help students learn to: distinguish between the concepts of hazard, risk, disaster; classify and describe types of hazards; explain hazard characteristics such as magnitude, frequency, intensity and rate of onset and their importance; conduct hazard identification, and hazard assessment		
DS.04.17	***Hydrobiology***	
Spring / 2	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
The goal of this subject is to fathom the knowledge on the particularities of aquatic life, as well as its relationships between different groups if aquatic plants and animals. The students have the opportunity to learn theoretical and practical aspects of aquatic pollution, due to human activities. The problems raised by water eutrofication are also presented, as well as the association of organisms that characterize the marine environment.		
DS.03.18	***Phytosociology and Romanian vegetation***	
Autumn / 2	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 2
This subject interferes with many branches of Botany, and it deals with description and studying phitocenoses, as well as their matching into vegetal associations. Vegetation mapping and its description from different points of view provides a complete image upon teh vegetal layer within a given region. The taxonomic system unifies all plant communities, denominated according to some precise rules.		

3rd year

DF.05.01	***Impact Study Methodology***	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5
The course has the following main goals: to learn the students with a pragmatic methodology for the Impact Studies; to implement the methodology; to assess the scope and scale of impacts. This course explains the Environmental Impact Assessment (EIA) methodology and describes the Environmental Statement (ES) structure and content. In particular, it details the process of identifying the likely significant environmental effects of the Proposed Development and the method of assessing the significance of the effects.		
DF.05.02	***Pollution and Environmental Protection***	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5
The course analyses different type of factors causing pollution and the impact of pollution on environment. Measures needed to protect the environment are presented in relation to each of the identified pollutant.		
DF.05.03	***Environmental Economics***	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5

The lectures of this subject are common with the ones held in the first semester of forest economics and deal with the broad problem of the positive and negative externalities and their monetary assessment. In addition to that, students have the opportunity to acquire a great deal of knowledge about the economic instruments meant to correct the market failures.		
DF.05.04	***Restoration Ecology***	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5
The course offers a framework for evaluation, characterisation and solution outcome in the case of degraded areas. It is focus on identification, intensity evaluation, and classification of degraded ecosystems as well as detecting the main cause of the degradation. There are also presented the principles of restoration / rehabilitation / reconstruction and information regarding evaluation and monitoring degraded sites. In the last chapters the strategies, the methods and the different techniques used in ecological restoration are analysed.		
DF.05.05	***Environmental Law***	
Autumn / 3	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 5
Environmental law lectures target to improve the knowledge on the legislation related with the protection of different elements of the environment. The abilities that the lectures aims to develop are related with the synthesis of the legal rules, understanding the system of law regualting a certain domain, aplication of the liability rule in protecting the environment. The students will also acquire knowledge on the international legal rules governing the protection of the environment. In the application work, the students will use information available on web sites to show how a certain environmental element (soil, water, wildlife, air, etc.), is legally protected by the national laws and regulation.		
DS.06.06	***Global Environmental changes***	
Spring / 3	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 3
This course aims at familiarizing the students with the global problems brought about by the numerous disorder ocuured in biological, gelolgical and chemical natural cycles, as well as the carbon cycle and water cycle. These lectures also present the mechanisms through which these natural cycles have been disturbed, as well as the global measures undertaken in order to fade out their dimension and consequences. Legal aspects and international conventions on climate change are also presented.		
DS.06.07	***Ecotoxicology***	
Spring / 3	3 hours per week, 2nd semester: 28 Lectures / 14 labs	ECTS credits: 3
Acquiring some basic information about toxicology is important for further specialists in ecology and environmental protection, having in mind the numerous sources of pollution created by post-industrial society. Students are taught about the main sources of pollution, which are the main pollutants and which are their thresholds, accepted by the existing legal framework.		
DS.06.08	***Integrated pest control***	
Spring / 3	***4 hours per week,*** ***2nd semester: 28 Lectures / 28 labs***	ECTS credits: 3

The aim of the course is to develop knock ledges concerning morphology, bio-ecology, finding out, monitoring and integrated pest management (IPM) which damages the forestsand and agricultural crops. It is studding internal and external insect morphology, multiplication and developing, and outbreaks with its characteristics, followed by attacks, recognize and monitoring process. In integrated pest management are involved the whole methods preventive and for control, such as: cultural measures, physic-mechanical measures, chemical measures, biological measures (entomophagous insects, micro-organisms entomopatogenes), autocide and pheromones. Also, it is studding the main insects which attack through: defoliators, torsion and mining (lepidopterous and coleopterous insects); destroying the roots; destroying the barks and woods etc. It is taken into account the use of some control methods which do not affect the environment, useful organisms and people.		
DS.06.09	***Environmental Monitoring***	
Spring / 3	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 3
The global alteration of environment is measured by different indicators that need appropriate procedures, tools and legal framework based on international conventions and treaties. Although little has been done in this respect, different studies carried out around the world revealed that some species, some relics and the glaciers testify the process of climate change and air pollution. The students are taught how to tell these global changes by analyzing the dynamics of different populations of lichens, birds, and insects, recognized by the scientific communities as umbrella species or indicative species.		
DS.06.10	***Human Ecology***	
Spring / 3	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 3
This interdisciplinary subject helps student thoroughly understand the cause-effect relationships between social development and environmental degradation, in urban and peri-urban areas. Different aspects referring to ecological footprint, bioregionalism and urban ecology are extensively debated at this course.		
DF.06.11	***Legislation, policies and strategies***	
Spring / 3	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 2
The lectures aims at transferring to the students knowledge about the international policy processes related with the environmental protection, and at developping capacities for understanding the policy processes and the strategies on environmental protection. In the courses will present international policy processes related witht he environmental protection and how the civil society representatives were involved in theses policies. In the application work, the students will use information available on web sites to analyse how the policy process on a certain field were developped (air, soil and water quality, biodiversity, climate changes, waste management, dangerous substances).		
DS.06.12	***Preparation of the Graduation Thesis***	
Spring / 3	3 weeks	ECTS credits: 3
DF.05.13	**Ecosystem dynamics**	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5
This course provides general knowledge about the ecosystem changes produced over time, in order to better support the management plans conceived for natural ecosystems. Some basic notions are explained, such as: relationships between environmental factors and ecosystem development, biological processes steered by human activities, dynamic equilibrium and steadiness. As for the practical works, students are taught about some standard techniques used in studying the ecosystem dynamics, such as polenology, as well as about the dynamics of the main inland ecosystems, such as natural forest and mountainous bodies of water.		

DF.05.14	***Management of protected areas***	
Autumn / 3	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 5
Attending this subject, our students get familiarized with the most important issues related to nature conservation, including the legal framework and the history of nature conservation, around the world. În addition to the general knowledge, the students learn the basic information needed for producing and implementing the management plans of protected areas.		
DC.06.15	***Remote Sensing***	
Spring / 3	2 hours per week, 2nd semester: 14 Lectures / 14 labs	ECTS credits: 5
Remote sensing aims at qualitative and quantitative study of the terrain by using sensors located on air platforms or satellites.		
DS.06.16	***Ecological Processes Modeling***	
Spring / 3	2 hours per week, 2nd semester: 14 Lectures / 14 labs	ECTS credits: 5
The course presents mathematical models and systems analysis used in depicting ecological processes and natural resources management. Ecological models represent abstract representations of ecological systems which helps us to understand the real systems. The students will be able to comprehend elementary ecosystem functions and ecological theory using mathematical and conceptual modelling, systems analysis, computer simulations. There are presented different model types - models suited for studying space/time dynamics, population growth or resource availability, as well as computer software used in ecological modelling.		
DC.06.17	***Waste management***	
Spring / 3	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
This course presents the general and specific knowledge referring to waste management, legal framework on waste management as well as the main technologies used for recycling the main categories of materials (metals, plastic, glass etc.). The course is structured according to the principles of blue economy: recycling, reutilization and innovation.		
DC.06.18	***Environmental Conflict Management***	
Spring / 3	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
This module provides an alternative approach to the understanding of the interests resulting from forest management. The class targets students who aim to understand the role of non-governmental organizations, the state and private companies in the management of natural resources with a special focus on forest resources. The module integrates one component for the analysis of inter-personal conflicts and between interests groups, having at a final point the familiarization of students with alternative methods for environmental conflict resolution (mediation, facilitation, negotiation etc)		

B.1.2. Description of courses MSc Biodiversity Conservation and Ecosystem Management Programme: 2017-2018

1st year/ Autumn

DSI.01.01	***Biodiversity Conservation***	
Autumn / 1	2 hours per week, 1st semester: 14 Lectures / 14 seminars	**ECTS credits:5**
The discipline offers the basic information regarding the biodiversity and it`s increasing importance in the contemporary world. The levels, scales, spatial and temporal distribution of biodiversity are described and analysed with special attention paid to the importance of biodiversity in maintaining the stability, structure and function of ecosystems and of the whole ecosphere. Another important topic is represented by the causes of the current massive biodiversity loss and by the multiple motives for the biodiversity conservation. In this context the major modalities for conserving biodiversity at regional, national and international level are pointed out.		
DSI.01.02	***Evaluation and conservation of forest genetic resources***	
Autumn / 1	3 hours per week, 1st semester: 28 Lectures / 14 seminars	**ECTS credits: 6**
Unlike the genetics applied in agriculture, where the short life spans allowed a fast and even spectacular breeding for a lot of species and varieties, the forest genetics confined to highlighting the intraspecific variety of the main wooden species gene pools. At this course students learn about the risks of genetic drift that might occur for some species, about the conservative measures needed to protect this diversity and also about the natural inter-breeding reported by various specialists meanwhile.		
DSI.01.03	***Integrated management of forest resources***	
Autumn / 1	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 7
The course aims to familiarize the students with principles, concepts and models underlying the adaptive and integrated management of forest resources. In respect to this, the following information will be provided: the whole assemble of forest resources and means to assess them; forest ecosystems stability and their behaviour under the action of extreme disturbing factors; adaptive and sustainable multifunctional management of forest resources in order to ensure the ecological balance and to maintain or increase their productivity.		
DAP.01.04	***Fungal diversity in forest ecosystems***	
Autumn / 1	2 hours per week, 1st semester: 14 Lectures / 14 seminars	ECTS credits: 5
The concepts presented in the course aims to form a general view on the main systems of classification, morphology, structure and growth of the fungus. An important role is attributed to acquire the capacity to identify the species of fungi, knowledge about the complex role of fungi in forest ecosystem of interrelations between fungi, trees and environmental factors in the development and evolution of mycorrhize.		
DAP.01.09 / DAP. 01.10	***Diversity and chorology of wooden species / Biodiversity source of natural compounds with practical uses***	
Autumn / 1	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 7
Diversity and chorology of wooden species - *Global climate change involves overloading limits the environmental performance of forest woody species. Thus, each species adapts their morphology in the intervals required by specific phenotype, their behaviour can be maintained within the optimal ecology, suboptimal or limit its affordability. Dynamics of forest ecosystems and the transition from one geographical area to another, determine the replacement of one species with another similar but different in morphology and ecology. These matters are subject of the chorology or area of each taxonomic unit.* ***Biodiversity source of natural compounds with practical uses*** *- This course provides a vision of the diversity of natural products – compounds from the great category of secondary metabolites – in the perspective of biodiversity. The aim is to focus the student's attention to the natural product diversity, examined at the functional level, namely as signalling and defensive agents, and how the wild diversity is exploited, modified through biotechnological techniques and recreated or imitated via "green" total chemical synthesis or technologies. Therefore, the molecular details are considered. In this analysis, the value of the natural product*		

as a drug is kept within the limits imposed by the advancement in the knowledge of the molecular structure of the targets, which is opening the way to the rational design of drugs and other compounds used in the integrated pest management.

1st year/ Spring

DSI.01.05	***Methods for evaluation the populations of plants and animals***	
Spring / 1	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 4
The course presents to the students the assessment and stock inventory methods of different populations from the biocenosis. There are presented the common methods which are used for the assessment/stock-inventory of the vegetal associations, insects, reptiles, birds, small mammals, but also of large mammals. A course section also presents the main indicators used in quantifying the biodiversity.		
DAP.02.06	***Geo-Information Systems***	
Spring / 1	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
The course aims to familiarize the students with the structure of geo-information systems, the system and software requirements and procedures to be followed and data sources available online or for purchase. The focus themes are: open source and licensed GIS software use, landscape dynamics applications based on available Corine Land Cover data, the use of GPS software for spatial data acquisition and inventory network implementation, data interpolation techniques, data format compatibility with INSPIRE directive		
DAP.02.07	***Forest and chain of custody certification***	
Spring / 1	4 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 6
The forest certification is one of the voluntary instruments that can be used to prove the sustainable management of forests. Initiated in the 90s for tropical forests protection against massive deforestation, the certification further expanded to temperate and boreal forests. Consequently, the evolution in time and space of the forest certification process, the main international certification schemes and the certification standards are studied. Than the FSC certification of Romanian state and private forests and its effects on forest management are analysed. The certification standards for companies that process certified wood and are pursuing the chain of custody certification are also profess.		
DSI.02.08	***Pollution influence on physiological processes in plants***	
Spring / 1	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 4
During the course are the main natural and anthropogenic sources of pollution and types of pollutants with major impact on plants. An important role is given to knowledge and understanding of bioaccumulation mechanisms by studying the fundamental physiological processes in relation to environmental factors change through the actions of noxious pollution.		
DSI.02.11 / DSI. 02.12	**Applied statistics / Habitats typology and conservation**	
Spring / 1	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
Applied statistics *– The course covers statistical methods and techniques that are widely applicable to inquiries in the environmental science. Students learn how to collect, manage, analyse data and interpret outcomes using computer language and software and present their statistical results. The course focuses on how to design an experiment to study a phenomenon of interest. The topics covered include sample sizes, hypothesis testing, residual analysis, error propagation, graphical analysis, analysis of variance, confidence intervals and regression analysis. Students practice using standard statistical computer package to analyse data.* ***Habitats typology and conservation*** *– Habitats play an important role in landscape and ecosystem functioning. This course on Habitats typology and Conservation focuses on various approaches to natural habitat classification and their conservation. Different hierarchical classification systems, habitat categories and types as well as specific terminology are discussed in order to develop students' ability to understand and operate with these concepts.*		

DAP.02.13 / DAP. 02.14	**Rehabilitation of disturbed ecosystems / Plants biosemiotics**	
Spring / 1	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 6
Rehabilitation of disturbed ecosystems - *The discipline offers the basic knowledge on major phenomena of landscape, soil and ecosystems degradation. The main covered processes are: soil erosion, soil compaction, soil salinization, nitrite and nitrate pollution of soil and groundwater, degradation of floodplain ecosystem. Each degradation process is described in terms of presenting the phenomenon, identifying affected areas, methods of prevention and rehabilitation techniques.* ***Plants biosemiotics*** *- Biosemiotics is a transdisciplinary science which contains empirical and theoretical studies, investigating the signalling processes (semiosis) in and between the organisms in a variety of communication patterns. The course is focusing on three kinds of signs: clues, images and symbols in address to the current biocommunication:* - *Clues: in most cases are abiotic factors from the environment, which are interpreted as signals* - *Images are one-to-one biotic explicit signals* - *Symbols: signs or signal sequences that are the consequence of natural or cultural agreements.*		

2nd year/ Autumn

DSI.03.15	***Dynamics of natural ecosystems***	
Autumn / 2	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 6
Due to numerous soil and whether conditions, the natural terrestrial ecosystems are altered in different ways, with respect to their structure and functionality. Therefore, their study is an interdisciplinary scientific endeavour. This course presents the long-term main succession tendencies featured by large groups of ecosystems and knowing their biotic and non-biotic components is a major condition for being well-trained in nature conservation.		
DSI.03.16	***Landscape Ecology and Management***	
Autumn / 2	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 6
Landscape ecology is a multidisciplinary new born science. It covers multiple perspectives on very different phenomenon and processes. The landscape is the main object of the study, with all its elements, composition, structure, function or space/time dynamic. The course analyses the fluxes and relationships between ecological processes and ecosystems, land use change, process scale, space variability, support capacity and possibility of landscape conservation or rehabilitation. Landscape Ecology offers an adequate and particular framework for solving real ecological problems regarding planning, conservation, rehabilitation and sustainable/responsible management of the environment.		
DAP.03.17	***Management of protected areas***	
Autumn / 2	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 6
This course deals with the system of protected areas created in Romania and EU and provides to students the opportunity to shape a broader vision on the problems raised by nature conservation, by learning the IUCN philosophy is this issue. The outcome for students is their capacity to produce management plans for protected areas.		
DAP.03.18	***Integrated Pest Control***	
Autumn / 2	2 hours per week, 1st semester: 14 Lectures / 14 seminars	ECTS credits: 5
The aim of the course is to develop knock ledges concerning morphology, bio-ecology, finding out, monitoring and integrated pest management (IPM) which damages the forests and agricultural crops. It is studding internal and external insect morphology, multiplication and developing, and outbreaks with its characteristics, followed by attacks, recognize and monitoring process. In integrated pest management are involved the whole methods preventive and for control, such as: cultural measures, physic-mechanical measures, chemical measures, biological measures (entomophagous insects, micro-organisms entomopatogenes), autocide and pheromones. Also, it is studding the main insects which attack through: defoliators, torsion and mining (lepidopterous and coleopterous insects); destroying the roots; destroying the barks and woods etc. Each insect pest species is presented under economical importance, as morphological aspects of developing stages (egg,		

larvae, pupa and adult), biology and number of generations, attack recognising, monitoring and finally integrated pest management. It is taken into account the use of some control methods that do not affect the environment, useful organisms and people.		
DAP.03.22	***Dendrochronology /Management of Ecosystem services***	
Autumn / 2	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 7
Dendrochronology *– Dendrochronology is an interdisciplinary science which is focusing on the dating and study of annual rings (growths) in trees. A more complex approach could present dendrochronology as the scientific method of studying processes or events that are recorded in the tree-ring archives. Students will learn the central principles of dendrochronology, the scientific basis, techniques, and applications of dendrochronology (dendroclimatology, dendroecology, dendroarchaeology).* *Specific methods and techniques are presented: collecting and preparing tree-ring samples, dating the samples, constructing tree-ring chronologies, using different methods of series standardization, cross-dating techniques, analysing temporal patterns.* ***Ecosystem services management*** *– This course was meant to improve the knowledge concerning the payments for ecosystem services (PES) about the students were informed in the last semester of graduation studies on forestry and to help them understand the whole legal framework and the required institutional arrangements needed to implement PES. All-important methods employed in assessing the economic value of ecosystems services are resumed and augmented with more details about the statistical and computational challenges brought up in literature and the main findings of Millennium ecosystem assessment project.*		

2nd year/ Spring

DSI.04.19	***Project Management***	
Spring / 2	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
This course deals with the system of protected areas created in Romania and EU and provides to students the opportunity to shape a broader vision on the problems raised by nature conservation, by learning the IUCN philosophy is this issue. The outcome for students is their capacity to produce management plans for protected areas.		
DSI.04.20	***Research and documentation***	
Spring / 2	10 weeks x 12 hours 2nd semester: 120 hours	ECTS credits: 15
During the last semester the students will collect data needed for the dissertation project.		
DSI.04.21	***Elaboration of the dissertation research project***	
Autumn / 2	4 weeks X 14 hours 2nd semester: 56 hours	ECTS credits: 10
During the last semester the students will collect data needed for the dissertation project.		

B.2.2. Description of courses MSc Management of Forestry Activities Programme: 2017-2018

1st year/ Autumn

DSI.01.01	**Particularities of forest management**	
Autumn / 1	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 6
This course presents the peculiarities of the forest management applied by the productive units that operate in forestry, forest harvesting and wood processing, emphasizing the information sources needed for a business plan. In addition to that, at seminars, students are getting a series of knowledge about the requirements needed for certifying the chain of custody.		
DSI.01.02	**Decision making process**	
Autumn / 1	3 hours per week, 1st semester: 14 Lectures / 28 seminars	ECTS credits: 5
This subject deals mainly with the decision making methods, which are generally labeled as operational researches. A great deal of interest is assigned to the multi-criteria methods, linear programming and queue methods too.		
DSI.01.03	**Integrated management of forest resources**	
Autumn / 1	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 7
The course aims to familiarize the students with principles, concepts and models underlying the adaptive and integrated management of forest resources. In respect to this, the following information will be provided: the whole assemble of forest resources and means to assess them; forest ecosystems stability and their behaviour under the action of extreme disturbing factors; adaptive and sustainable multifunctional management of forest resources in order to ensure the ecological balance and to maintain or increase their productivity.		
DAP.01.04	**Organization of wood-processing activities**	
Autumn / 1	3 hours per week, 1st semester: 28 Lectures / 14 seminars	ECTS credits: 7
Wood processing has a series of particularities derived not only from the modern wood processing technologies but from the labor organization requirements and labor security. This course presents the organization techniques as well as the production processes, from the equipment location to the production security and labor safe.		
DAP.01.05	**Human resources management**	
Autumn / 1	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
Management of human resource is a central focus of any management activity. The lectures aim at forming students to the understanding of how it is functioning the management of human resources in firms from forest sector. In finalising this course, the students should have the capacity to understand and to analyse the selection, training, evaluation, motivation and promotion of staff. The main aim of the lecture is to help students to critically analyse the way of human resource management in the forest sector and to be able to argue for implementing a strategic approach in human resource management.		

1st year/ Spring

DSI.02.06	**Wood market and forest economics**	
Spring / 1	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 7
This one semester course is being taught at the beginning of the master program meant to shape and improve the managerial skills in forest harvesting and timber processing companies, and it is a follow-up of the economics taught in the graduate program. The pricing systems applied for timber are thoroughly learned, including the statistical background needed for transaction analysis, are taught, as well as some new market failures, which are analysed from the standing point of social cost. The last but not the least issue is the data needed for different analyses, which can be downloaded from various Internet sources.		
DAP.02.07	**Strategy of the forestry companies**	
Spring / 1	3 hours per week,	ECTS credits: 5

	1st semester: 14 Lectures / 14 seminars	
Management strategic targets the development of managerial skills by learning about how the strategy works, and how the startegic approach can improve the firm's position on the market. Master students are encouraged and guided for elaborating the strategy for a firm, using the SWOT, PEST and other strategic instruments. The main aim is to convince the master students that firms using a startegic approach of the management have greater chances on the market by correctly identifying their competitive advantage.		
DAP.02.08	**Environmental-friendly logging technologies**	
Spring / 1	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 7
The course aimed at acquiring by the students of the principles of the wood exploitation with low environmental impact and the development of skills on: analyzing of modern technical means and methods for the exploitation of wood; establishing and managing of the design and the organizing way for technological processes of wood exploitation in ecologically restrictive conditions (eco-friendly logging practices).		
DAP.02.09 / DAP 02.10	**Forest and chain of custody certification / Entrepreneurship and innovation**	
Spring / 1	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 6
Forest and chain of custody *certification - The forest certification is one of the voluntary instruments that can be used to prove the sustainable management of forests. Initiated in the 90s for tropical forests protection against massive deforestation, the certification further expanded to temperate and boreal forests. Consequently, the evolution in time and space of the forest certification process, the main international certification schemes and the certification standards are studied. Than the FSC certification of Romanian state and private forests and its effects on forest management are analysed. The certification standards for companies that process certified wood and are pursuing the chain of custody certification are also profess.* ***Entrepreneurship and innovation*** *– The lectures on Entrepreneurship and innovation have the scope to help students acquiring basic knowledge needed while starting a business on their own, running a business or introducing a product or process innovation within the firm. Within the practical trainings, the students will prepare a business plan to support their own business idea; will have information about different programmes to support entrepreneurship in rural areas; and will identify and analyse several cases of innovation in timber industry and harvesting operations.*		
DAP.02.11 / DAP 02.12	**Life cycle assessment / Geo-Information Systems**	
Spring / 1	3 hours per week, 2nd semester: 28 Lectures / 14 seminars	ECTS credits: 7
Life cycle assessment *–this is an introductory course in a new-brand ISO certification scheme based on through analyses of all resources needed to produce durable wood-based products. Basically students are taught about the two types of LCA – cradle-cradle and cradle-to-grave and how to assess the technological consumptions for energy, wood and non-wood materials used in lumber, floor, wood-based houses and furniture. Insights about the concept of green and circular economy are also provided and demonstrated with real case-studies from wood industry.* ***Geo-Information Systems:*** *The course aims to familiarize the students with the structure of geo-information systems, the system and software requirements and procedures to be followed and data sources available online or for purchase. The focus themes are: open source and licensed GIS software use, landscape dynamics applications based on available Corine Land Cover data, the use of GPS software for spatial data acquisition and inventory network implementation, data interpolation techniques, data format compatibility with INSPIRE directive*		

2nd year/ Autumn

DAP.03.13	**The information Flow of the Company**	
Autumn/2	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
Due to the numerous positive externalities ensued by forests, the company and public institutions involved in forest management are connected by different types of reports, all of them being gathered into the so-called information system, which bears the information flows. The goal of this course is to familiarize the students with all these reports a forest company must comply with, a special concern being given to the statistics reports and information flows related to timber circulation.		

DSI.03.14	**Peculiarities and Management of Forest Investments**	
Autumn/2	4 hours per week, 2nd semester: 14 Lectures / 14 seminar	ECTS credits: 5
This course provides information concerning the economics behind investments in forest roads and torrents control, where the cashflows are spare or simply do not exists. The basic cost-benefit and cost-effective analyses assumed by these two types of investments are thoroughly presented along with the legal framework concerning investment economics, including the loopholes the forest managers and planners shall be aware of.		
DSI.03.16	**Forest products marketing**	
Autumn / 2	3 hours per week, 1st semester: 14 Lectures / 28 seminars	ECTS credits: 6
The main aim of the module is to introduce to the students general marketing techniques and to determine the possibilities of their adaptation to the peculiarities of the forest production system. The module presents the role of marketing activities as an important component of the firms' strategy. Principally, the module analyses specific methods to promote goods and services provided by forests, differentiated for mass products and for territorial goods and services.		
DAP.03.17 / DAP.03.18	**Statistical analysis of technological processes / Complex watershed management**	
Autumn / 2	3 hours per week, 1st semester: 14 Lectures / 28 seminars	ECTS credits: 7
Statistical analysis of technological processes *– Statistical Process Control (SPC) is a component of the quality management using statistical methods for observing a complex technological process in order to identify its systematic deviations. The statistical analysis of technological processes is the main tool in monitoring, control, analysis and identifying operational errors for all of the productive activities. The main goal is to improve the quality of production using statistical methods for quality control of production: sequential analysis, adjusting with specific theoretical distribution, control cards. Are highlighted also the successive stages of examining the performance capacity of a process of production in order to maintain its adjustment between the limits which determine optimum functioning.* ***Complex watershed management*** *– The features of the new generation of projects and assisted management programs are presented, along with the changes that took place in other fields of development and conservation. Students understand the importance of the watershed, as basal units for landscape managements, as well as the impact of land-use management on producing water and sediments. Students are getting familiar with the best management practices and they are also aware of the role played by the foresters in managing the resources provided within the watershed.*		
DSI.03.22 / DSI.03.15	**Quality management of forest products / Specific software in wood harvesting and wood industry**	
Autumn / 2	4 hours per week, 1st semester: 28 Lectures / 28 seminars	ECTS credits: 7
Quality management of forest products *– The novel concept of total quality management is taught during the third semester allowing for a clear picture on the new dimensions of the modern management. Basic theories and models are presented as case studies making a knowledge bridge with the statistical analysis of technological process. The ISO standards referring to this issue are briefly presented the most important issues being the reasons why the harvesting companies failed to implement high quality standards though the forest certification process put a high pressure on common problems like logging operations and tree felling. Pruning young stands is also resumed as a means to produce high quality logs.* ***Specific software in wood harvesting and wood industry*** *Although there are quite a few software applications dedicated to forest sector, a deep understanding of the general-purpose software application is useful for any specialist in managing harvesting operations and wood processing works. In addition to that, the students have the opportunity to get new knowledge and skills in using the data base information systems, like Microsoft Access.*		

2nd year/ Spring

DSI.04.19	**Project Management**	
Spring / 2	2 hours per week, 2nd semester: 14 Lectures / 14 seminars	ECTS credits: 5
The course aims to familiarize the students with management principles for different project types: scientific, development, investment etc. There are provided information regarding each step of the project: writing the proposal, accessing the funding, evaluation process and management of the project. Students will be guided to identify various sources of funding for projects, using different application guides. The course also address the management of project resources (human, financial, material, etc.), taking into account the potential risks.		

DAP.04.20	**Research and documentation**	
Spring / 2	10 weeks x 12 hours 2nd semester: 120 hours	ECTS credits: 15
During the last semester the students will collect data needed for the dissertation project.		

DSI.04.21	**Elaboration of the dissertation project**	
Spring / 2	4 weeks X 14 hours 2nd semester: 56 hours	ECTS credits: 10
During the last semester the students will collect data needed for the dissertation project.		