



ОД 7.5-02

UNIVERSITY OF FORESTRY

FACULTY OF FORESTRY

Approved:

Dean:
(Assoc. Prof. Marius Dimitrov, PhD)



COURSE SYLLABUS

AGROFORESTRY SYSTEMS

Course Prefix and Number: **FOR 231**

Credits: **6**

INCLUDED IN CURRICULUM OF PROGRAM: **FORESTRY**

DEGREE: **MASTER**

FORM OF EDUCATION: **FULL-TIME and PART-TIME**

DEPARTMENT: **SILVICULTURE.**

April, 2023

INFORMATION CARD

For the course: **Agroforestry systems**

Code: **FOR 231**

Faculty of Forestry

Program: Forestry

Degree: MASTER	Type of the course: elective	Year: Full-time: I Part-time: II	Semester: Full-time: 2 Part-time: 3
Methodical guidance: Department: Silviculture University of Forestry, floor III, room 337, tel.: 91 907 ext. 273	Teaching staff: Lectures: Assoc. Prof. Krasimira Petkova DSc; Prof. Sonya Bencheva PhD; Assoc. Prof. Milena Yordanova PhD, Assist. Prof. Slavcho Savev PhD Exercises/seminars: Assoc. Prof. Krasimira Petkova DSc; Prof. Sonya Bencheva PhD, Assist. Prof. Slavcho Savev PhD		Credits: 6
<p>Course objectives:</p> <p>To give detailed information about the possibilities of agroforestry as a form of land use, in which the cultivation of tree and/or shrub vegetation is combined with agricultural crops and/or animals, which builds on the knowledge acquired in the "Basics of Agroforestry" course for Bachelor degree, speciality Forestry</p>			
<p>Requirements:</p> <p>Lecture room (multimedia), internet access</p>			
Meeting the requirements of the National Qualifications Framework for Level 7			
<p>Course description:</p> <p>The first part of the course provides information on the importance of the agroforestry, its application possibilities and classification of agroforestry systems.</p> <p>The second part of the course presents a detailed description of the main types of agroforestry systems for temperate climate conditions (shelterbelts, river bank shelterbelts, alley cropping system, sylvopastoral system, forest farming, biomass production plantations) with specific examples from foreign and our experience. Attention is given to the more important agricultural crops suitable for agroforestry, as well as domestic animals and beneficial insects used in agroforestry systems.</p> <p>Specific plant protection problems in agroforestry systems, ecological aspects and socio-economic features of agroforestry are the subject of the third part of the course. Students are also introduced to the legislation related to the implementation of agroforestry systems.</p> <p>In the exercises, students get acquainted with the design methodology and the technology of establishment, growing and maintaining different agroforestry systems and prepare a research project report according to an individual assignment. Coursework developed on a topic chosen by the student from the field of agroforestry is also presented. It is planned that the classes on topic 8 of the exercises for the full-time students will be held in Vrazhdebna Training and experimental field centre under real production conditions.</p>			
<p>Teaching methods: lectures, laboratory exercises and practical courses in Vrazhdebna Training and experimental field centre, independent work, research project report and coursework preparation</p>		<p>Assessment methods: research project report – 30%, coursework – 10%,; exam – 60%.</p>	

Excerpt from the curriculum

Type of activity	Semester		Class hours		
	Full-time	Part-time	Full-time, weekly	Full-time, total	Part-time, total
1. Lectures	II	III	2	30	15
2. Exercises	II	III	2	30	15
3. Research project report	II	III			
4. Coursework	II	III			
5. Exam	II	III			

Credits by type of activity

Full-time:

1) Contact credit hours – 2 credits;

2) Out-of-class credit hours – 4 credits: coursework – 0,6 credits, research project report – 1,0 credits, exam preparation – 2,4 credits.

Part-time:

1) Contact credit hours – 1,0 credits;

2) Out-of-class credit hours – 5,0 credits: coursework – 0,8 credits, research project report – 1,2 credits; exam preparation – 3,0 credits.

Code of activity	Out-of-class activities	Hours	Credits
Full-time			
A ₁	Course work preparation	18	0,6
A ₂	Research project report preparation	30	1,0
A ₃	Exam preparation	72	2,4
	Total:	120	4,0
Part-time			
A ₁	Coursework preparation	24	0,8
A ₂	Research project report preparation	36	1,2
A ₃	Exam preparation	90	3,0
	Total:	150	5,0

CONTENT OF SYLLABUS
A. LECTURES

№	Title and content	Class hours
1.	Concept of agroforestry. Need and importance. Advantages and disadvantages. Classification of agroforestry systems	2
2.	Shelterbelts - the main agroforestry system. Meaning and types of belts. Basic shelter belt parameters. Influence of the shelterbelts on microclimate and soil conditions and on the productivity of crops and domestic animals	2
3.	River-bank shelterbelts - goals and functions, determination of suitable plant species and parameters of the river-bank shelterbelts, agro-technology of establishment and cultivation	2
4.	Alley cropping system - advantages and disadvantages, main components and requirements for them, criteria for selection of suitable tree and agricultural species, agro-technical measures, economic efficiency	2
5.	Silvopastoral system - advantages and disadvantages, basic components, principles of establishment and maintenance	2
6.	Forest farming - essence and meaning. Additional forest products - subject to forest farming	3
7.	Agroforestry systems from consistent type – biomass production plantations, opportunities and prospects, technology of establishment and management	2
8.	Influence of agroforestry systems on some characteristics of the basic agricultural crops (cereals, vegetables, leguminous, fruit, technical)	4
9.	Cultivation of domestic animals and beneficial insects in agroforestry systems.	3
10.	Ecological aspects of agroforestry	2
11.	Socio-economic advantages and disadvantages of agroforestry systems	2
12.	Specific phytosanitary problems and pest control in agroforestry systems. Possibilities to use interactions between components in agroforestry systems.	3
13.	Legislation related to the possibility of implementing agroforestry practices.	1
Total lectures:		30

B. EXERCISES


№	Title and content	Class hours
1.	Technology of establishment and maintenance of shelterbelts - choice of suitable tree and shrub composition, soil preparation, methods of afforestation and care	2
2.	Assignment for research project report and coursework	2
3.	Design and establishment of river-bank shelterbelts	2
4.	Features in the technology of establishment and cultivation of alley cropping agroforestry system	2
5.	Features in the technology of establishment and cultivation of silvopastoral agroforestry system	2
6.	Features in the technology of establishment and cultivation of forest farming agroforestry system	2
7.	Features in the technology of establishment and cultivation of biomass production plantations	2
8.	Characteristics of the basic agricultural crops (cereals, vegetables, leguminous, fruit, technical) suitable for agroforestry in Bulgaria	4
9.	Setting up and reporting an experiment on the co-cultivation of tree and agricultural plants	4


10.	Specific diseases and pests in agroforestry systems.	2
11.	Summarising of the results of the coursework and acceptance of the research project report	6
Total exercises:		30

Literature

1. Alexandrov, A., K. Genov. 2001. Agroforestry in Bulgaria. Third Balkan Scientific Conference, Sofia, 2–4.10.2001, I, 278–284.
2. Fetting, C. 2020. The European Green Deal, ESDN, Report, December 2020, ESDN Office, Vienna, 22 p., https://www.esdn.eu/fileadmin/ESDN_Reports/ESDN_Report_2_2020.pdf
3. Kachova, V., G. Hinkov, E. Popov, L. Trichkov, R. Mosquera-Losada. 2016. Agroforestry in Bulgaria: history, presence status and prospects. Agroforest Syst. doi:10.1007/s10457-016-0029-6.
4. New EU Forest Strategy for 2030, Commission staff working document, The 3 Billion Tree Planting Pledge For 2030, 53 p. https://knowledge4policy.ec.europa.eu/publication/commission-staff-working-document-swd2021651-3-billion-tree-planting-pledge-2030_en
5. Ordinance No. 3 of March 10, 2023 on the conditions and procedure for implementing interventions in the form of direct payments included in the Strategic Plan, on inspections, reductions in payments and the procedure for imposing administrative sanctions, Ministry of Agriculture, SG No. 23/14/03/2023
6. Stancheva, Y., S. Bencheva, K. Petkova, K. Kalmukov, M. Milev, S. Mirchev, S. Dimitrov, S. Savev, N. Iliev. 2001. Agroforestry - a system for environmentally friendly and multifunctional use of natural resources. Publishing house at University of Forestry, Sofia, 99 (in Bulgarian).
7. Stancheva J., Bencheva S., Petkova K., Tsvetkova N, 2003. Effect of Root Exudation on the Germination and Some Growth Indexes at an Intercropping of Agricultures and Forest Plants. In: PSP "50 years University of Forestry", session "Ecology and Environment Protection", p.103-106 (in Bulgarian with engl. Abstract).
8. Stancheva, Y., K. Petkova, S. Bencheva, M. Broshtilova, K. Broshtilov, N. Tzvetkova. 2004. Agroforestry. Publishing house "Ruta", Sofia, 239 (in Bulgarian).
9. Stancheva, Y. et al. 2008. Handbook of the entrepreneur in organic farming. Sofia, Publishing house Avangard Prima, Sofia, 216 (in Bulgarian).
10. Stancheva, Y., K. Petkova, S. Bencheva. 2015. Agroforestry. Publishing house Avangard Prima, Sofia, 225 (in Bulgarian).
11. Stancheva, Y., K. Petkova, S. Bencheva. 2015. A secure future for global crop production, Gora, 6–7, 16–17 (in Bulgarian).
12. The Convention on Biological Diversity, 1993, <https://www.cbd.int/convention/>
13. Trichkov, L., V. Kachova. 2016. Necessity, opportunities and priorities for development of agroforestry in Bulgaria. Forestry ideas, vol. 22, № 1 (51): 3–15.
14. UNCCD (United Nation Convention to Combat Desertification), 1994, <https://www.unccd.int/>

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