Biotechnical Faculty / NURSERY PRODUCTION / SUBSTRATES IN NURSERY PRODUCTION

Course:	SUBSTRATES IN NURSERY PRODUCTION			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
13420	Mandatory	3	6	3+1+1
Programs	NURSERY PRODUCTION			
Prerequisites	do not have			
Aims	Acquaint students with the substrates used in modern nursery production. A recap previous knowledge and familiarization with new technical and technological achievements in the nursery production. Substrates in the production of various agricultural crops. Preservation and improvement of soil quality in nursery production			
Learning outcomes	After passing the exam, the student will be able to: - recognize important substrates which are used in nursery production; - choose and apply modern nursery technology of production; - organizes and manages nursery production			
Lecturer / Teaching assistant	Dr Jelena Lazarević			
Methodology	Lectures, exercises, seminar work, test and final exam.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Concept of substrate in plant production. Substrates in nursery. Native substrates.			
I week exercises	Organization of nursery production. Production in a protected area and in the open field (advantages and disadvantages)			
II week lectures	Soil as a natural substrate. Basic physical properties of soil.			
II week exercises	Water-air properties of the soil			
III week lectures	Soil as a natural substrate. Basic chemical properties of soil. Chemical composition of the soil, mineral nutrition of plants			
III week exercises	Types of fertilizers and methods of fertilization in plant production			
IV week lectures	Organic component of soil; Biodiversity in soil. Basic functions of soil organisms and microorganisms. Mycorrhizal fungi.			
IV week exercises	Morphology of soil organisms and microorganisms			
V week lectures	Soil conservation, good practices that preserve health and quality			
V week exercises	composting, mulching, green fertilization, vermicomposting			
VI week lectures	Objects of protected plant production. Tunnels, greenhouses and greenhouses; types of facilities, advantages and deficiency; equipping facilities			
VI week exercises	Foil in agricultural production. Examples			
VII week lectures	Watering, watering systems in sheltered areas and outdoors			
VII week exercises	Examples of watering systems			
VIII week lectures	Vessels and containers in plant production			
VIII week exercises	Practical insight into these materials			
IX week lectures	Peat. Conditions of creation and division. Peat cultural substrates in plant (nursery) production. The other materials of plant origin as substrates in plant production			
IX week exercises	Practical work and introductory with peat based substrates. Testing of water-air characteristics.			
X week lectures	Materials of mineral origin as substrate components in plant production. classification, characteristics.			
X week exercises	Practical work and familiarization with these materials. Testing of water and air characteristics (independent and in mixture)			
XI week lectures	Test			
XI week exercises	Market of substrate mixtures. Substrate mixtures on commercial sale. Examples.			
XII week lectures	Substrate mixtures. Mixtures for sowing seeds; Scarring compounds. Substrate mixtures for plant care (after transplantation)			

XII week exercises	Practical work and familiarization with these materials. Testing of water and air characteristics (independent and mixed in)
XIII week lectures	Hydroponic growing of plants, basic principles
XIII week exercises	Substrates and containers in hygroponic growing of plants. Examples of successful productions
XIV week lectures	Aquaponics, basic principles
XIV week exercises	Aquaponics, basic principles Exercise: Examples of good production practices (video material)
XV week lectures	Examples of the production of plant crops in different production technologies and in mixtures of different composition
XV week exercises	Practical work and familiarization with different substrate mixtures Testing (independent and mixed)
Student workload	Weekly: 6 credits x 40/30 = 8 hours. Structure: 3 hours of lectures, 1 hour of exercises, 1 hour of laboratory, 3 hours independent work, including consultations; During the semester: Classes and final exam: 8 hours x 16 weeks = 128 hours Necessary preparations before the beginning of the semester (administration, registration, certification) 2 x 8 hours = 16 hours Total load for the course: 6x 30 = 180 hours Additional work for exam preparation in the remedial course deadline, including taking a make-up exam from 0 to 36 hours Load structure: 128 hours (teaching), 16 hours (preparation) and 36 hours (additional work)

Per week	**Per semester**
6 credits x 40/30=8 hours and 0 minuts 3 sat(a) theoretical classes 1 sat(a) practical classes 1 excercises **3 hour(s) i 0 minuts** of independent work, including consultations	Classes and final exam: **8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts** Total workload for the subject: **6 x 30=180 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **36 hour(s) i 0 minuts** Workload structure: **128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)**
Student obligations	Students are required to attend classes and exercises
Consultations	Wednesday; 4-5 pm (after class, classroom)
Literature	Radulović M. 2011: Production of dendrological planting material, script Karasek, K. 2000: Greenhouses in floriculture and nurseries, Parthenon, Belgrade Stilinović S. 1987. Production of planting material of forest and ornamental trees and bushes", University of Belgrade, Faculty of Forestry
Examination methods	- Seminar work: 10 points - Test: 30 points - Final exam: 60 points Grades and points: A (≥ 90 to 100 points); B (≥ 80 to < 90); C (≥ 70 to < 80); D (≥ 60 to < 70); E (≥ 50 to < 60) F < of 50
Special remarks	Lectures are held in the classroom. Exercises are performed in the classroom and practice room/ the nursery
Comment	

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points