

**Biotechnical Faculty / PLANT PROTECTION / PLANT VIROLOGY**

<b>Course:</b>	PLANT VIROLOGY			
<b>Course ID</b>	<b>Course status</b>	<b>Semester</b>	<b>ECTS credits</b>	<b>Lessons</b> (Lessons+Exercises+Laboratory)
12348	Mandatory	1	6	3+0+2
<b>Programs</b>	PLANT PROTECTION			
<b>Prerequisites</b>	No conditionality by other exams.			
<b>Aims</b>	The course aims to provide students with knowledge of plant viruses, including their properties, structure, replication, genome structure, and gene expression. It covers the classification and nomenclature of plant viruses, methods for controlling viral infections, and information on economically important viruses affecting various agricultural crops.			
<b>Learning outcomes</b>	A student who has passed this exam will be able to demonstrate knowledge of the basic characteristics of plant viruses (biological, physical, chemical, serological); understand the genetics of plant viruses; differentiate the replication processes of different groups of plant viruses; be able to recognise the types of symptoms caused by viral infections; be able to apply basic laboratory methods in the identification of plant viruses (biological, serological, molecular); know the epidemiology of plant viruses, which leads to their appearance and spread; know the most economically important viruses of cultivated plants.			
<b>Lecturer / Teaching assistant</b>	Assist. prof. Jelena Zindović			
<b>Methodology</b>	The course includes lectures, practicals (both laboratory and field-based), independent work, and consultations.			
<b>Plan and program of work</b>				
Preparing week	Preparation and registration of the semester			
I week lectures	Properties and Structure of Phytopathogenic Viruses			
I week exercises	Plant Virology Laboratory. Work in the laboratory and glasshouse. Sowing test plants			
II week lectures	Infection and spread of virus in the plant			
II week exercises	Sterilization and disinfection procedures			
III week lectures	Epidemiology of Plant Viruses			
III week exercises	Preservation of virus infected plant material			
IV week lectures	Replication of Plant Viruses			
IV week exercises	Bioassay and mechanical inoculations of test plants			
V week lectures	Genome Structure and Gene Expression of Plant Viruses			
V week exercises	Biophysical properties of plant viruses. Symptoms on test plants.			
VI week lectures	Plant virus gene expression strategies			
VI week exercises	Serological methods			
VII week lectures	Classification and nomenclature of plant viruses			
VII week exercises	ELISA test			
VIII week lectures	Control of viral diseases			
VIII week exercises	Western blot			
IX week lectures	Viruses of agricultural crops			
IX week exercises	Dot blot. Lateral flow			
X week lectures	Viruses of agricultural crops			
X week exercises	Molecular methods			
XI week lectures	Viruses of vegetable crops			
XI week exercises	RNA and DNA extraction			
XII week lectures	Grapevine viruses			
XII week exercises	PCR, RT-PCR			

XIII week lectures	Viruses of pome fruits					
XIII week exercises	Multiplex PCR, Touch down PCR, Nested PCR					
XIV week lectures	Viruses of stone fruits					
XIV week exercises	Electrophoresis					
XV week lectures	Viruses of small fruits. Viruses of subtropical fruits					
XV week exercises	Real-time PCR					
<b>Student workload</b>	Per week 6 credits x 40/30 = 8 hours Structure 3 hours of lectures 2 hours of practicals 3 hours of individual student work (preparation exercises, making a seminar paper) including consultations In the semester Classes and final exam: 8h x 16 = 128 hours; Necessary preparations (administration, enrollment, semester certification): 2 x 8 h. = 16 hours; Total workload for the course: 6 x 30 = 180 hours. Supplementary work: from 0 to 42 hours. Load structure: 128 hours (teaching) + 16 hours (preparation) + 36 hours (additional work)					
<b>Per week</b>			<b>Per semester</b>			
<b>6 credits x 40/30=8 hours and 0 minuts</b> 3 sat(a) theoretical classes 2 sat(a) practical classes 0 excercises <b>3 hour(s) i 0 minuts</b> of independent work, including consultations			Classes and final exam: <b>8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts</b> Necessary preparation before the beginning of the semester (administration, registration, certification): <b>8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts</b> Total workload for the subject: <b>6 x 30=180 hour(s)</b> 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) <b>36 hour(s) i 0 minuts</b> Workload structure: <b>128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)</b>			
<b>Student obligations</b>			Students are required to attend classes, complete all laboratory and field practicals, write a seminar paper, participate in both colloquiums and final exam.			
<b>Consultations</b>			One hour per week will be agreed upon with the students.			
<b>Literature</b>			1. Bagi, F., Jasnic, S., Budakov, D. (2016): Viroze biljaka, Univerzitet u Novom Sadu – Poljoprivredni fakultet, Novi Sad; Šuti, D. (1995): Viroze biljaka, Univerzitet u Beogradu - Poljoprivredni fakultet, Beograd; 3. Krstić, B., Tošić, M. (1994): Biljni virusi – neke osobine i dijagnoza, Univerzitet u Beogradu – Poljoprivredni fakultet 4. Foster, G., Johansen, E., Hong, Y., Nagy, P.D. (2008): Plant Virology Protocols. Humana Press.			
<b>Examination methods</b>			Attendance and activity in class: 5 points Seminar paper: 5 points Tests: (2x7) 14 points Colloquium: (2x13) 26 points Final exam 50 points A passing grade is obtained if at least 50 points are accumulated cumulatively. Grade: number of 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			
<b>Special remarks</b>						
<b>Comment</b>						
<b>Grade:</b>	F	E	D	C	B	A
<b>Number of points</b>	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