

Biotechnical Faculty / LIVESTOCK PRODUCTION / MICROBIOLOGY

Course:	MICROBIOLOGY							
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exer cises+Laboratory)				
2858	Mandatory	2	4.5	3+2+0				
Programs	LIVESTOCK PRODUCTION							
Prerequisites	none							
Aims	To knowledge and understanding of morphology, physiology, ecology and systematics of microorganisms, with special emphasis on microorganisms that are important for livestock, to their role in the production of animal feed and the production of animal products for human consumption							
Learning outcomes	Introducing students to the morphology, physiology, ecology and systematics of microorganisms, with special reference to microorganisms that are important for animal husbandry, their role in the production of animal feed and the production of animal products for human consumption.							
Lecturer / Teaching assistant	Mirjana Bojanić Rašović							
Methodology	Lectures, consultations, colloquiums							
Plan and program of work								
Preparing week	Preparation and registration of the semester							
I week lectures	The subject, importance and historical development of microbiology							
I week exercises	The work in the microbiology laboratory, microscopes and microscope applications in microbiology							
II week lectures	The morphology of the microorganisms							
II week exercises	Laboratory glassware, utensils and appliances. Cleaning and preparation of dishes and utensils for sterilization. The use of sterilization in microbiology							
III week lectures	Ecology of microorganisms							
III week exercises	Microscopic slides							
IV week lectures	Nutrition and metabolism of microorganisms							
IV week exercises	Morphology of microorganisms. Staining of microorganisms							
V week lectures	Growth, reproduction and movement of microorganisms. Genetics of microorganisms. Microorganisms and genetic engineering							
V week exercises	The cultivation of microorganisms in laboratory conditions							
VI week lectures	Colloquium I							
VI week exercises	Isolation of pure cultures of microorganisms							
VII week lectures	Corrective colloquium							
VII week exercises	More important biochemical reactions that are used in the identification of microorganisms							
VIII week lectures	Microbial classification. The habitat of microorganisms in nature. Microorganisms with special properties							
VIII week exercises	Serological diagnostics of bacterial diseases							
IX week lectures	Pathogenicity of microorganisms. Defense mechanisms of the host.							
IX week exercises	Rumen microorganisms and their metabolic functions							
X week lectures	Introduction to infectious animal diseases. Pathogenic microorganisms for animals							
X week exercises	Microorganisms silage							
XI week lectures	Parasites of domestic animals							
XI week exercises	Lactic acid fermentation							
XII week lectures	The microorganisms in the digestive tract of ruminants. Microorganisms in animal feed. Probiotics							
XII week exercises	Microbiological testing of food of animal origin							
XIII week lectures	Micro-organisms in the production of food of animal origin. Useful and harmful role of microorganisms in the production of foodstuffs of animal origin							
XIII week exercises	Presentation of seminar papers							



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XIV week led	tures	Colloquium II								
XIV week ex	ercises	Corrective test								
XV week lec	tures	Corrective colloquium II								
XV week exe	ercises	Corre	ctive colloquium II							
Student wo	orkload									
Per week				Per semester						
 4.5 credits x 40/30=6 hours and 0 minuts 3 sat(a) theoretical classes 0 sat(a) practical classes 2 excercises 1 hour(s) i 0 minuts of independent work, including consultations 		Classes and final exam: 6 hour(s) i 0 minuts x 16 =96 hour(s) i 0 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 6 hour(s) i 0 minuts x 2 =12 hour(s) i 0 minuts Total workload for the subject: 4.5 x 30=135 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) 27 hour(s) i 0 minuts Workload structure: 96 hour(s) i 0 minuts (cources), 12 hour(s) i 0 minuts (preparation), 27 hour(s) i 0 minuts (additional work)								
Student obligations			the presence of lectures and exercises, doing the homework, tests, seminar paper							
Consultations			2 hours during the week							
Literature			Recommended literature: Opšta mikrobiologija i mikrobiologija u stočarstvu (script), autor: Dr Mirjana Bojanić Rašović(2014). Mikrobiologija, Poljoprivredni fakultet, Novi Sad, author: Mirjana Jarak, Govedarica Mitar(2003); Praktikum iz mikrobiolog							
Examination methods			- Oral discussion of questions from lectures up to 11 points (one lecture is valued at one point). Students can colloquiate during the discussion in class, or during regular consultations Oral discussion of questions from exercises - with a practical demonstration in the laboratory and completed workbook, up to 12 points (one exercise is valued at one point). Students who pass the exercises are exempted from the practical part of the exam Work and presentation of the seminar paper up to 7 points - Two colloquiums of 10 points each (20 points in total); Colloquiums are taken in writing (10 questions for 1 point each). The duration of the colloquium is 60 minutes. If the student takes a remedial colloquium, the grade from the remedial colloquium Final exam 50 points. The final exam consists of a practical and an oral part. The practical part is taken in the laboratory by drawing two exam questions. After that, the oral part is taken by drawing 3 exam questions. A passing grade is obtained if at least 50 points are accumulated cumulatively.							
Special remarks			Teaching ($P + V$) is performed for a group of 30 students, and laboratory exercises for groups with 10 students.							
Comment										
Grade:	F		E	D	С	В	А			
Number of points	less than 50 points	1	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			