

**Biotechnical Faculty / LIVESTOCK PRODUCTION / MICROBIOLOGY**

<b>Course:</b>	MICROBIOLOGY			
<b>Course ID</b>	<b>Course status</b>	<b>Semester</b>	<b>ECTS credits</b>	<b>Lessons</b> (Lessons+Exercises+Laboratory)
2858	Mandatory	2	4.5	3+2+0
<b>Programs</b>	LIVESTOCK PRODUCTION			
<b>Prerequisites</b>	none			
<b>Aims</b>	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			
<b>Learning outcomes</b>	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.			
<b>Lecturer / Teaching assistant</b>	Mirjana Bojanić Rašović			
<b>Methodology</b>	Lectures, consultations, colloquiums			
<b>Plan and program of work</b>				
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			

XIV week lectures	Colloquium II					
XIV week exercises	Corrective test					
XV week lectures	Corrective colloquium II					
XV week exercises	Corrective colloquium II					
<b>Student workload</b>						
<b>Per week</b>			<b>Per semester</b>			
<b>4.5 credits x 40/30=6 hours and 0 mins</b> 3 sat(a) theoretical classes 0 sat(a) practical classes 2 exercises <b>1 hour(s) i 0 mins</b> of independent work, including consultations			Classes and final exam: <b>6 hour(s) i 0 mins x 16 =96 hour(s) i 0 mins</b> Necessary preparation before the beginning of the semester (administration, registration, certification): <b>6 hour(s) i 0 mins x 2 =12 hour(s) i 0 mins</b> Total workload for the subject: <b>4.5 x 30=135 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>27 hour(s) i 0 mins</b> Workload structure: <b>96 hour(s) i 0 mins (courses), 12 hour(s) i 0 mins (preparation), 27 hour(s) i 0 mins (additional work)</b>			
<b>Student obligations</b>			the presence of lectures and exercises, doing the homework, tests, seminar paper			
<b>Consultations</b>			2 hours during the week			
<b>Literature</b>			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			
<b>Examination methods</b>			- 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 is entered, regardless of the number of points earned on the 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.			
<b>Special remarks</b>			Teaching (P + V) is performed for a group of 30 students, and laboratory exercises for groups with 10 students.			
<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