

Study program: PHARMACY			
Type and level of studies: Integrated academic studies, Level 1/2			
Course unit: SPORTS PHARMACY			
Teacher in charge: Associate Professor Vladimir Zivkovic, MD, DSc			
Language of instruction: ENGLISH			
ECTS: 7			
Prerequisites: Enrolled in the seventh block of the study program			
Semester: WINTER SEMESTER			
Course unit objective: Introducing students with the role of pharmacists in sports and testing and detecting drug abuse in sports. Advisory and educational role of pharmacists in the sports team in the prevention and detection of doping. Introduction with the work of specialized laboratories for the detection of collected substances in sports. Proper dosing of nutritional supplements in sports. Use of drugs in sports. Monitoring and analysis of the effects of applied drugs on biochemical and hematological parameters and functional performance of the organism.			
Learning outcomes of Course unit:			
<ul style="list-style-type: none"> • Knowledge about legislative rules that regulate the use of drugs and medicinal substances in sport. • Knowledge about abuse of drugs and medical substances in sports. • Knowledge about the use of nutritional supplements in sports and monitoring the effects of their application. • Knowledge about the methods for detecting the use of doping agents. • Skills about HPLC methods in qualitative and quantitative analysis of illicit substances in dietary supplements. • Skills about screening of biological material for the presence of certain groups of drugs used in doping. 			
Course unit contents			
<p><i>Theoretical classes</i></p> <p>Biomedical sciences in sport. Sports medical-pharmaceutical doctrine in Serbia. The impact of modern sport on the human body. The role and place of pharmacists in modern sport. Legal frameworks for the use of drugs and medicinal substances in sport. The most common injuries in sport. Pharmacological therapy of the most common sports injuries. Changes in water-salt balance during physical activity. Effects of dehydration on the body. Nutritional needs of athletes. Basic principles of proper and timely nutrition of athletes. Dietary supplements in sport. Vitamins and minerals as supplements in sport. Amino acids and proteins as supplements in sport. Ergogenic agents as supplements in sport. Illicit drugs and medicinal substances in sport. Doping in sport. Exemption for therapeutic use (TUE). Supplementation and doping. Doping sanctions.</p> <p><i>Practical classes</i></p> <p>Sports medical organizations in the world and their importance. Physical ability. The role and place of pharmacists in the sports team. Practical application of legislative rules that regulate the use of drugs and medicinal substances in sports. Prevention of the most common injuries in sports. Specifics of hydration in relation to gender, age of the athlete and type of sport. Principles of composing a nutritious meal for athletes. The use of dietary supplements in athletes. Doping control. TUE analysis in Serbia. The most common practical issues related to the use of supplements.</p>			
Literature			
<ul style="list-style-type: none"> • Vladimir Jakovljevic, Nenad Dikic. Sports Medicine. Faculty of Medical Sciences. Kragujevac 2016 • Vladimir Lj. Jakovljevic (editor-in-chief). Ganong's review of medical physiology. 1st edition in Serbian. Faculty of Medical Sciences, University of Kragujevac; 2015. (Kim E. Barrett, Susan M. Barman, Scott Boitano, Heddwyn Brooks. Ganong's Review of Medical Physiology. 24th Edition. LANGE Basic Science; 2012.) 			
Number of active teaching hours: 75			Other classes
Lectures: 30	Practice: 30	Other forms of classes: 15	
Teaching methods: Lectures and small group work.			

Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	15	oral examination	
practical classes/tests	15	written examination	70
Seminars/homework		
Project			
Other			
Grading system			
Grade	No. of points	Description	
10	95-100	Excellent	
9	85 – 94	Exceptionally good	
8	75 – 84	Very good	
7	65 – 74	Good	
6	55 – 64	Passing	
5	< 55	Failing	

(Table 5.2) Course unit description