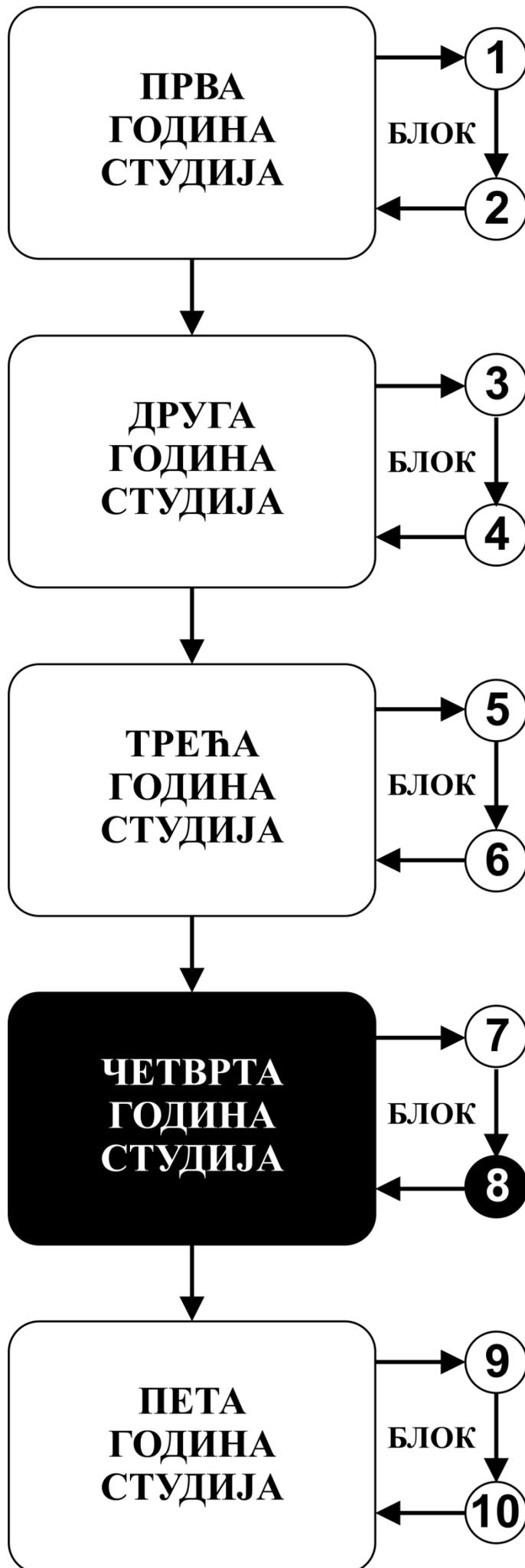




INTEGRATED ACADEMICS PHARMACY STUDIES

FOURTH YEAR OF STUDY

school year 2025/2026.



Subject:

SPORTS PHARMACY

The course is valued at 7 ECTS credits. There are 5 hours of active teaching per week (2 hours of lectures, 2 hours of small group work and 1 hour of seminar).

TEACHERS AND ASSOCIATES:

RB	First and last name	Email address	Title
1.	Vladimir Jakovljevic	drvladakbg@yahoo.com	full professor
2.	Gvozden Rosic	grosic@medf.kg.ac.rs	full professor
3.	Ivan Srejovic	ivan_srejovic@hotmail.com	associate professor
4.	Dragica Selakovic	dragica984@gmail.com	associate professor
5.	Jovana Joksimovic Jovic	jovana_joksimovic@yahoo.com	associate professor
6.	Jasmina Sretenovic	drj.sretenovic@gmail.com	assistant professor
7.	Maja Muric	majanikolickg90@gmail.com	assistant professor

COURSE STRUCTURE:

Module	Module name	Sunday	Lectures	Small group work	Teacher-leader of the module
1	Basics of sports pharmacy 1	5	2	2	Doc. dr. Jasmina Sretenović
2	Basics of Sports Pharmacy 2	5	2	2	Doc. dr. Jasmina Sretenović
3	Basics of sports pharmacy 3	5	2	2	Doc. dr. Jasmina Sretenović
					$\Sigma 60+30=90$

RATE:

The student masters the subject in modules. The grade is equivalent to the number of points earned (see tables). Points are earned in two ways:

1. ACTIVITY DURING TEACHING:In this way, a student can earn up to 30 points by answering 2 exam questions from that week of classes in the last class of small group work, and according to the knowledge demonstrated, they earn 0-2 points.

2. FINAL EXAM:The final exam is organized as a final test. In this way, a student can earn up to 70 points, according to the attached table. The test consists of 35 questions. Each question is worth 2 points. If a student scores 36 or more points on the test, the final exam is passed.

A student has the right to take the final test if he or she has achieved over 50% of the points required for the activity and tests per module in all modules.

Postponing the final test (in subsequent examination periods) does not reduce the number of points that define the final grade.

MODULE		MAXIMUM POINTS		
		activity during class	final test	Σ
1	Basics of sports pharmacy	30	70	100
Σ		30	70	100

The final grade is formed as follows:

To pass the course, a student must earn a minimum of 51 points and pass all modules.

To pass the module, the student must:

1. obtain more than 50% of points in each module
2. acquire more than 50% of the points allocated for class activity in each module
3. pass the final exam, i.e. have more than 50% correct answers on the final test.

number of points earned	rating
0 - 50	5
51 - 60	6
61 - 70	7
71 - 80	8
81 - 90	9
91 - 100	10

MODULE TESTS

MODULE 1.

FINAL TEST **0-70 POINTS**

EVALUATION **FINAL TEST**

The test has 35 questions.
Each question is worth 2 points.

LITERATURE:

MODULE	TEXTBOOK NAME	AUTHORS	PUBLISHER	LIBRARY
BASICS OF SPORTS PHARMACY 1	Ganong's Review of Medical Physiology, first edition in Serbian.	Ganong William. Vladimir Jakovljevic editor-in-chief	Faculty of Medical Sciences, Kragujevac 2015.	Has
	Sports medicine	Vladimir Jakovljevic, Nenad Dikic	Faculty of Medical Sciences, Kragujevac 2016.	Has
BASICS OF SPORTS PHARMACY 2	Ganong's Review of Medical Physiology, first edition in Serbian.	Ganong William. Vladimir Jakovljevic editor-in-chief	Faculty of Medical Sciences, Kragujevac 2015.	Has
	Sports medicine	Vladimir Jakovljevic, Nenad Dikic	Faculty of Medical Sciences, Kragujevac 2016.	Has
FUNDAMENTALS OF SPORTS PHARMACY 3	Ganong's Review of Medical Physiology, first edition in Serbian.	Ganong William. Vladimir Jakovljevic editor-in-chief	Faculty of Medical Sciences, Kragujevac 2015.	Has
	Sports medicine	Vladimir Jakovljevic, Nenad Dikic	Faculty of Medical Sciences, Kragujevac 2016.	Has

All lectures and materials for small group work are available on the Faculty of Medical Sciences website: www.medf.kg.ac.rs

PROGRAM:

UNIT 1 (FIRST WEEK):

BIOMEDICAL SCIENCES IN SPORTS AND THE ROLE OF PHARMACISTS IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
The importance of biomedical sciences in sports. Development of medical-pharmaceutical doctrine in sports. Sports medical-pharmaceutical doctrine in Serbia.	The role and place of the pharmacist in a sports team.

UNIT 2 (SECOND WEEK):

HEALTH EFFECTS OF MODERN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
The impact of modern sports on the human body. Positive and negative effects of sport on health.	Physical ability

UNIT 3 (THIRD WEEK):

PHYSICAL ACTIVITY OF SPECIAL GROUPS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Functional characteristics and physical activity of special groups.	Assessment of physical ability of special groups

UNIT 4 (FOURTH WEEK):

SPORTS INJURIES AND PHARMACOLOGICAL THERAPY OF SPORTS INJURIES

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Functional characteristics and physical activity of special groups.	Assessment of physical ability of special groups

UNIT 5 (FIFTH WEEK):

PHARMACEUTICAL PRINCIPLES OF HYDRATION IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Changes in water-salt balance during physical exertion. Ionic homeostasis during prolonged physical activity. Effects of dehydration on the body.	Principles of proper and timely hydration in sports. Specifics of hydration in relation to gender, age of the athlete and type of sport.

UNIT 6 (SIXTH WEEK):

VITAMINS AND MINERALS AS SUPPLEMENTS IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Basic characteristics of vitamins and minerals as dietary supplements. The influence of the most important vitamins and minerals on metabolic processes and the function of organ systems.	The use of vitamins and minerals in sports. Specificities of the use of vitamin and mineral supplementation in relation to gender, age and type of sports activity.

UNIT 7 (SEVENTH WEEK):

AMINO ACIDS AND PROTEINS AS SUPPLEMENTS IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Basic characteristics of amino acids and proteins. Amino acids and proteins as dietary supplements. The effect of amino acids and proteins on metabolic processes and the function of organ systems.	The use of amino acids and proteins in sports. Specificities of the use of amino acids and proteins in relation to gender, age and type of sport.

UNIT 8 (EIGHTH WEEK):

ERGOGENIC AGENTS AS SUPPLEMENTS IN SPORTS

2 hours of lectures and 1 hour of seminars	
2 hours of exercise Ergogenic aids: definition and types. Ergogenic aids as dietary supplements. Effects of the use of ergogenic aids on metabolic processes and the function of organ systems.	The use of ergogenic aids in athletes. Specificities of the use of ergogenic aids in relation to gender, age and type of sport.

UNIT 9 (NINETH WEEK):

DIETARY SUPPLEMENTS IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
General characteristics of dietary supplements: definition and types. The effect of dietary supplements on the body.	Application of dietary supplements in athletes. Specificities of the application of dietary supplements in relation to gender, age and type of sport.

UNIT 10 (TENTH WEEK):

PHARMACEUTICAL PRINCIPLES OF NUTRITION IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Nutritional needs of athletes. Basic principles of proper and timely nutrition of athletes. The impact of dietary correction on the metabolic status of the organism.	Principles of composing a nutritious meal for athletes. Needs for different forms of nutrients during different types of physical exertion.

UNIT 11 (ELEVENTH WEEK):

DOPING IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Unauthorized drugs and medicinal substances in sports. Drug abuse in sports.	Doping control.

UNIT 12 (WEEK TWELFTH):

SPORTS ENDOCRINOLOGY AND DOPING

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Hormonal response to different types of sports. Response of the endocrine axis to the use of various doping agents.	Effects of the use of various hormonal doping agents on the endocrine axis in relation to gender and type of sport

UNIT 13 (THIRTEENTH WEEK):

THERAPEUTIC EXCEPTIONS IN SPORTS

2 hours of lectures and 1 hour of seminars	2 hours of exercise
The use of permitted drugs and medicinal substances in sports. Therapeutic Use Exemption (TUE).	Analysis of TUE in Serbia.

UNIT 14 (WEEK FOURTEENTH):

SIDE EFFECTS OF DOPING

2 hours of lectures	2 hours of exercise
Side effects of doping abuse in sports on different organ systems.	The most common practical questions related to side effects

UNIT 15 (FIFTEENTH WEEK):

SANCTIONING DOPING

2 hours of lectures and 1 hour of seminars	2 hours of exercise
Duties and rights of an athlete during doping control. Legal sanctions for the use of prohibited substances.	The most common practical questions related to the use of supplements.

LECTURES AND PRACTICE

FRIDAY

**PHYSIOLOGICAL PRACTICE
ROOM (R33)**

13.00-16.00

[Schedule of lectures, practical classes and tests – academic calendar](#)

TEACHING SCHEDULE FOR THE SUBJECT OF SPORTS MEDICINE

Sunday	type	Methodological unit name	teacher
1	L	Biomedical sciences in sportsPharmacists in sports.	Prof. dr. Vladimir Jakovljevic
1	P	The role and place of the pharmacist in a sports team.	Doc. dr. Maja Murić Prof. dr. Jovana Joksimović Jović
1	S	Biomedical sciences in sportsPharmacists in sports.	Prof. dr. Vladimir Jakovljevic
2	L	Health effects of modern sports	Prof. dr. Gvozden Rosić
2	P	Physical ability.	Doc. dr. Jasmina Sretenović Doc. dr. Maja Murić
2	S	Health effects of modern sports	Prof. dr. Gvozden Rosić
3	L	Functional characteristics and physical activity of special groups.	Doc. dr. Maja Muric
3	P	Assessment of physical ability of special groups	Doc. dr. Jasmina Sretenović Doc. dr. Maja Murić
3	S	Functional characteristics and physical activity of special groups.	Doc. dr. Maja Murić
4	L	Sports injuries and pharmacological therapy of sports injuries.	Prof. dr. Ivan Srežović
4	P	Basic principles of treating sports injuries.	Prof. dr. Ivan Srežović Prof. dr. Jovana Joksimović Jović
4	S	Sports injuries and pharmacological therapy of sports injuries.	Prof. dr. Ivan Srežović
5	L	Pharmaceutical principles of hydration in sports.	Prof. dr. Ivan Srežović
5	P	Principles of proper and timely hydration in sports.	Prof. dr. Ivan Srežović Doc. dr. Jasmina Sretenović
5	S	Specifics of hydration in relation to gender, age of the athlete and type of sport.	Prof. dr. Ivan Srežović
6	L	Vitamins and minerals as supplements in sports	Doc. dr. Jasmina Sretenović

TEACHING SCHEDULE FOR THE SUBJECT OF SPORTS MEDICINE

Sunday	type	Methodological unit name	teacher
6	P	The use of vitamins and minerals in sports. Specificities of the use of vitamin and mineral supplementation in relation to gender, age and type of sports activity.	Doc. dr. Jasmina Sretenović Doc. dr. Maja Murić
6	S	Vitamins and minerals as supplements in sports	Doc. dr. Jasmina Sretenović
7	L	Amino acids and proteins as supplements in sports	Prof. dr. Jovana Joksimović Jović
7	P	The use of amino acids and proteins in sports. Specificities of the use of amino acids and proteins in relation to gender, age and type of sport.	Prof. dr. Jovana Joksimović Jović Doc. dr. Jasmina Sretenović
7	S	Amino acids and proteins as supplements in sports	Prof. dr. Jovana Joksimović Jović
8	L	Ergogenic aids as supplements in sports	Prof. dr. Jovana Joksimović Jović
8	P	The use of ergogenic aids in athletes. Specificities of the use of ergogenic aids in relation to gender, age and type of sport.	Prof. dr. Jovana Joksimović Jović Doc. dr. Maja Murić
8	S	Ergogenic aids as supplements in sports	Prof. dr. Jovana Joksimović Jović
9	L	Dietary supplements in sports	Prof. dr. Dragica Selakovic
9	P	Specifics of the use of dietary supplements in athletes	Doc. dr. Jasmina Sretenović Doc. dr. Maja Murić
9	S	Dietary supplements in sports	Prof. dr. Dragica Selakovic
10	L	Pharmaceutical principles of nutrition in sports.	Prof. dr. Jovana Joksimović Jović
10	P	Principles of composing a nutritious meal for athletes.	Prof. dr. Jovana Joksimović Jović Prof. dr. Ivan Srejšević
10	S	Pharmaceutical principles of nutrition in sports.	Prof. dr. Jovana Joksimović Jović
11	L	Doping in sports.	Doc. dr. Jasmina Sretenović
11	P	Doping control.	Doc. dr. Jasmina Sretenović Prof. dr. Jovana Joksimović Jović

TEACHING SCHEDULE FOR THE SUBJECT OF SPORTS MEDICINE

Sunday	type	Methodological unit name	teacher
11	S	Doping in sports.	Doc. dr. Jasmina Sretenović
12	L	Sports endocrinology and doping	Doc. dr. Jasmina Sretenović
12	P	Effects of the use of various hormonal doping agents on the endocrine axis in relation to gender and type of sport	Doc. dr. Jasmina Sretenović Prof. dr. Ivan Srejović
12	S	Sports endocrinology and doping	Doc. dr. Jasmina Sretenović
13	L	Therapeutic exceptions in sports.	Doc. dr. Maja Murić
13	P	Analysis of TUE in Serbia.	Doc. dr Maja Murić Prof. dr. Ivan Srejović
13	S	Therapeutic exceptions in sports.	Doc. dr. Maja Murić
14	L	Side effects of doping	Prof. dr. Dragica Selakovic
14	P	The most common practical questions related to the side effects of doping agents.	Doc. dr. Jasmina Sretenović Prof. dr. Jovana Joksimović Jović
14	S	Side effects of doping	Prof. dr. Dragica Selakovic
15	L	Sanctioning doping.	Prof. dr. Dragica Selakovic
15	P	The most common practical questions related to the use of doping agents.	Doc. dr Maja Murić Doc. dr. Jasmina Sretenović
15	S	Sanctioning doping.	Prof. dr. Dragica Selakovic
	E	FINAL EXAM (January-February deadline)	