LITHUANIAN SPORTS UNIVERSITY

STUDY MODULE PROGRAMME (SMP)

Module Code	B	440	B	009	Accredited until	2017	06	01	Renewal date		
	Branch of Science		Progr.	Registr. №.							

Entitlement

Functional Anatomy and Biochemistry

Prerequisites

Understanding the basic knowledge of anathomy and biochemistry

Course (module) Learning Outcomes

№.	Learning Outcomes	Teaching / Learning Methods	Assessment Methods
1	• display constantly updated basic professional knowledge and well-developed learning skills;	Discussion, Exercise classes, Laboratory classes, Literature analysis, Problem-based learning	Control work
2	• Will be able to demonstrate the basic knowledge and well-developed learning skills that are constantly updated	Discussion, Exercise classes, Laboratory classes, Literature analysis, Problem-based learning	Control work
3	• creatively apply the knowledge of anatomy and biochemistry in analyzing the body's adaptation to exercise, as well as understand the basic principles and methods of scientific research;	Discussion, Exercise classes, Literature analysis, Problem-based learning, Reading list, Team project	Control work
4	• analyze human muscoloskeletal system, the systems of supply, biochemical processes based on scientific achievements of the anatomy and biochemistry, and know the structure and functions of the human body.	Discussion, Exercise classes, Literature analysis, Problem-based learning, Reading list	Examination

Main aim

Understanding the basic knowledge of anathomy and biochemistry

Summary

Studies describes organization of the body and cells, describing proteins, carbochydrates, fats structure, the relationship of structure to function

Level of module

Level of programme		Subject group (under the regulation of the area)
Cycle	Type	
First	Bachelor	Bendrojo universitetinio lavinimo

Group under financial classification

Syllabus

№.	Sections and themes	Responsible lecturer
1.	Introduction	499 doc. dr. Daiva Vizbaraitė (negalioja)
2.	Structure of the human body, chemical composition and methods of its measurement.	499 doc. dr. Daiva Vizbaraitė (negalioja)
3.	Proteins functions and metabolism	499 doc. dr. Daiva Vizbaraitė (negalioja)
4.	Enzymes, their functioning. Vitamins, their classification and functions	499 doc. dr. Daiva Vizbaraitė (negalioja)
5.	Regulation of water and electrolyte metabolism in rest and during exercise	499 doc. dr. Daiva Vizbaraitė (negalioja)

№.	Sections and themes	Responsible lecturer
6.	Carbohydrates, their functions and metabolism.	499 doc. dr. Daiva Vizbaraitė (negalioja)
7.	Lipids, their functions and metabolism	499 doc. dr. Daiva Vizbaraitė (negalioja)
8.	Biological oxidation	499 doc. dr. Daiva Vizbaraitė (negalioja)
9.	Physical exercise bioenergy	499 doc. dr. Daiva Vizbaraitė (negalioja)
10.	Human bones, their functions	36 lekt. Aiva Karpavičienė
11.	Human bone connections. Joint structure, classification	36 lekt. Aiva Karpavičienė
12.	Human skeletal muscles, their functions	36 lekt. Aiva Karpavičienė
13.	Structure and functions of the internal organs system	42 doc. dr. Pavelas Zachovajevas
14.	Anatomy of the respiratory system	42 doc. dr. Pavelas Zachovajevas
15.	Cardiovascular system structure, functions	42 doc. dr. Pavelas Zachovajevas
16.	Nervous system structure, functions	36 lekt. Aiva Karpavičienė
17.	Sensory nervous system and the structure of the Endocrine	42 doc. dr. Pavelas Zachovajevas
17.1	Sensory nervous system and the structure of the Endocrine	36 lekt. Aiva Karpavičienė

Evaluation procedure of knowledge and abilities:

References

№.	Title	Edition in Lithuanian Sports University library		In Lithuanian Sports University bookstore	Number of ex. in the methodical cabinet of the depart.
		Pressmark	Number of exemplars		
1.	Česnys G., Tutkuvienė J., Bartkus A. ir kt. (2008). Žmogaus anatomija I tomas. Vilniaus universiteto leidykla			No	
2.	Stropus R., Vaičekauskas V., Tutkuvienė J. ir kt. (2008). Žmogaus anatomija II tomas. KMU leidykla. Kaunas			No	
3.	Gedrimas V., Sasnauskas V. (2004) Mažasis žmogaus anatomijos atlasas. Vilnius. Arlila			No	
4.	Maughan R., Gleeson M. The biochemical basis of sports performance (2010)			No	1
5.	Gailiūnienė A., Milašius K. Sporto biochemija (2001)		50	No	
6.	Choi E.Y., Cho Y.O., (2013) Interaction of physical trainings and coffee intakes in fuel utilization during exercise in rats. Nutr. Res Pract. 7 (3) 178-84.			No	
7.	Cermak N.M., Van Loon L.J., (2013) The use of carbohydrates during exercise as an ergogenic aid. Sports Med., 43(11):1139-55.			No	
8.	Pinckaers P.J., Churchward-Venne T.A., Bailey D., Van Loon L.J. (2017) Ketone Bodies and Exercise Performance: The Next Magic Bullet of Merely Hype? Sport Med; 47(3):383-391.			No	
9.	Jonathan d. Bartlett, John A. Hawley, James P. Morton (2015) Carbohydrate availability and exercise training adaptation: Too much of a good thing? European Journal of Sport Science, Vol.15, No 1, 3-12.			No	

№.	Title	Edition in Lithuanian Sports University library		In Lithuanian Sports University bookstore	Number of ex. in the methodical cabinet of the depart.
		Pressmark	Number of exemplars		
10.	VLACHOPOULOS, DIMITRIS; BARKER, ALAN R.; WILLIAMS, CRAIG A.; ARNGRiMSSON, SIGURBJoRN A.; KNAPP, KAREN M.; METCALF, BRAD S.; FATOUROS, IOANNIS G.; MORENO, LUIS A.; GRACIA-MARCO, LUIS (2017) The Impact of Sport Participation on Bone Mass and Geometry in Male Adolescents. Medicine & Science in Sports & Exercise. 49(2):317-326.		0	No	0
11.	Anatomy of the human orbital muscle (OM): Features of its detailed topography, syntopy and morphologyOriginal Research Article Annals of Anatomy - Anatomischer Anzeiger, Volume 211, May 2017, Pages 39-45			No	
12.	Anatomy and variations of plantaris muscle in fetusesOriginal Research Article Journal of the Anatomical Society of India, Volume 64, Issue 1, June 2015, Pages 79-86 Kadir Desdicioglu, Ceren Uguz, Busra Sakallı, Esra Koyuncu, Mehmet Ali Malas			No	

Additional literature

№.	Title
1.	Zachovajevas P. ir Karpavičienė A. (2001). Anatomijos praktikos darbai. Mokomoji priemonė. Kaunas. LKKA
2.	Vestonas T. (1997) Anatomijos atlasas. UAB "Gamta".
3.	Frich H., Kumner B., Putr R. (1990) Atlas of Human Anatomy. Karger.
4.	Синелников Р., Синелников Я. (1996) Атлас анатомии человека. 4 т. Москва. Медицина.
5.	www//bartleby.com/107.
6.	Frankel V.H., Nordin M. Basic biomechanics of the musculoskeletal system, Lippincott Williams & Wilkins, 2001
7.	Topp K., Boyd B. Structure and Biomechanics of Peripheral Nerves: Nerve Responses to Physical Stresses and Implications for Physical Therapist Practice. Physical Therapy, 2006 vol. 86 no. 1, pp. 92-109
8.	Choi E.Y., Cho Y.O., (2013) Interaction of physical trainings and coffee intakes in fuel utilization during exercise in rats. Nutr. Res Pract. 7 (3) 178-84.
9.	Pinckaers P.J., Churchward-Venne T.A., Bailey D., Van Loon L.J. (2017) Ketone Bodies and Exercise Performance: The Next Magic Bullet of Merely Hype? Sport Med; 47(3):383-391.
10.	Rosset R., Lecoultre V., Egli L., Cros J., Dokumaci A.S., Zwygart K., Boesch C., Kreis R., Schneiter P., Tappy L. (2017) Postexercise repletion on muscle energy stores with fructose or glucose in mixed meals. Am J Clin;105(3):609-617.
11.	Jeff S. Volek, Timothy Noakes, Stephen D. Phinney (2015) Rethinking fat as fuel for endurance exercise European Journal of Sport Science, Vol.15, No 1, 13-20
12.	Vlachopoulos, Dimitris 1; Ubago-Guisado, Esther 2; Barker, Alan R. 1; Metcalf, Brad S. 1; Fatouros, Ioannis G. 3; Avloniti, Alexandra 4; Knapp, Karen M. 5; Moreno, Luis A. 6; Williams, Craig A. 1; Gracia-Marco, Luis 1,6 (2017) Determinants of Bone Outcomes in Adolescent Athletes at Baseline: The PRO-BONE Study. Medicine & Science in Sports & Exercise.
13.	WEISS, EDWARD P.; JORDAN, RICHARD C.; FRESE, ETHEL M.; ALBERT, STEWART G.; VILLAREAL, DENNIS T. (2017) Effects of Weight Loss on Lean Mass, Strength, Bone, and Aerobic Capacity. Medicine & Science in Sports & Exercise. 49(1):206-217.
14.	HASER, CHRISTIAN; STOGGL, THOMAS; KRINER, MONIKA; MIKOLEIT, JORG; WOLFAHRT, BERND; SCHERR, JOHANNES; HALLE, MARTIN; PFAB, FLORIAN (2017) Effect of Dry Needling on Thigh Muscle Strength and Hip Flexion in Elite Soccer Players. Medicine & Science in Sports & Exercise. 49(2):378-383.

Coordinating lecturer

Position	Degree, surname, name	Schedule №.
Associate Professor	Assoc. Prof. Dr. Daiva Vizbaraitė	346

Subdivision

Entitlement	Code
a	2006

Study module teaching form №. 1

Semester		Mode of studies	Structure				Total hours	Credits
			Theory	Seminars	Lab Works	Ind. work		
A	S	D	17	35	0	208	260	10

Languages of instruction:

Lithuanian	L	English	E	Russian	R	French	F	German	G	Other	Oth.

Plan of in-class hours

№. of Themes	Academic hours			№. of Themes	Academic hours		
	Theory	Seminars	Lab Works		Theory	Seminars	Lab Works
1.	1	0	0	10.	1	2	0
2.	1	2	0	11.	1	2	0
3.	1	2	0	12.	1	2	0
4.	1	3	0	13.	1	2	0
5.	1	2	0	14.	1	2	0
6.	1	3	0	15.	1	2	0
7.	1	2	0	16.	1	2	0
8.	1	2	0	17.	1	3	0
9.	1	2	0				
				Total:	17	35	0

Schedule of individual work tasks and their influence on final grade

	№. of syllabus	Total hours	Influence on grade, %	Week of presentment of task (*) and reporting (o)															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17-20
Exam	1-17	126	60	*					*			*							0	
Control work	6-9	11	5		*					0										
Literature reviewing and presentation	2-9	10	5		*												0			
Reporting for laboratory work	2-9	10	5		*													0		
Control work	13-17	20	10					*					0							
Control work	10-12	20	10						*			0								
Control work	2-5	11	5								*						0			
Total:	-	208	100																	

Study module teaching form №. 2

Semester		Mode of studies	Structure				Total hours	Credits
			Theory	Seminars	Lab Works	Ind. work		
A	S	D	6	20	0	234	260	10

Languages of instruction:

Lithuanian	L	English	E	Russian	R	French	F	German	G	Other	Oth.

Plan of in-class hours

№. of Themes	Academic hours			№. of Themes	Academic hours		
	Theory	Seminars	Lab Works		Theory	Seminars	Lab Works
				Total:	0	0	0

Schedule of individual work tasks and their influence on final grade

	№. of syllabus	Total hours	Influence on grade, %	Week of presentment of task (*) and reporting (o)															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17-20
Exam	1-17	126	40	*															0	
Control work	12	10	20					*					0							
Control work	10-11	10	20						*			0								
Control work	13-14	10	20							*				0						
Total:	-	156	100																	

Study module teaching form №. 3

Semester		Mode of studies	Structure				Total hours	Credits
			Theory	Seminars	Lab Works	Ind. work		
A	S	N	17	35	0	208	260	10

Languages of instruction:

Lithuanian	L	English	E	Russian	R	French	F	German	G	Other	Oth.

Plan of in-class hours

№. of Themes	Academic hours			№. of Themes	Academic hours		
	Theory	Seminars	Lab Works		Theory	Seminars	Lab Works
1.	1	0	0	10.	1	2	0
2.	1	2	0	11.	1	2	0
3.	1	2	0	12.	1	3	0
4.	1	2	0	13.	1	2	0
5.	1	2	0	14.	1	2	0
6.	1	3	0	15.	1	2	0
7.	1	2	0	16.	1	2	0
8.	1	2	0	17.	1	3	0
9.	1	2	0				
				Total:	17	35	0

Schedule of individual work tasks and their influence on final grade

	№. of syllabus	Total hours	Influence on grade, %	Week of presentment of task (*) and reporting (o)																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17-20
Control work	1-4	11	10	*			0													
Control work	5-7	10	5	*				0												
Literature reviewing and presentation	1-8	10	5	*					0											
Control work	9-14	20	10	*											0					
Control work	14-17	20	10	*														0		
Exam	1-17	126	60	*															0	
Total:	-	197	100																	