LITHUANIAN SPORTS UNIVERSITY

STUDY MODULE PROGRAMME (SMP)

Module Code	B	440	B	035	Accredited until				Renewal date		
	Branch of Science		Progr.	Registr. №.							

Entitlement

Biochemistry of Sport, Athletes Nutrition and Anti-doping

Prerequisites

Basic knowledge of biology, chemistry

Course (module) Learning Outcomes

№.	Learning Outcomes	Teaching / Learning Methods	Assessment Methods
1	Diskusija, Laboratoriniai darbai, Literatūros analizė, Pratybos, Problemomis grįstas mokymas	Group work	Case analysis (study), Directed private laboratory work, Literature analysis, Test
2		Case analysis (Case study), Problem-based learning	Case analysis (study), Control work
3		Case analysis (Case study), Discussion, Laboratory classes	Control work, Literature analysis, Oral presentation
4		Discussion, Laboratory classes, Literature analysis, Scientific paper analysis	Case analysis (study), Control work, Directed private laboratory work

Main aim

To promote personal and professional development of students in relation to communication skills, ability to apply recent scientific evidence considering impact of life style modification including changes in nutrition on

Summary

his module the focus is on principles and essentials of human nutrition, biochemistry with the main purpose of helping the students to develop a holistic and integrated understanding of this complex multifaceted scientific domain. Students will have understanding of the basics of the subject, the properties and sources of nutrient, and have focused attention upon how nutrition-related factors shape human health and disease across all stages of the life.

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	
2.	Structure of the human body, chemical composition and methods of its measurement.	
3.	Proteins functions and metabolism	
4.	Enzymes, their functioning. Vitamins, their classification and functions	
5.	Carbohydrates, their functions and metabolism.	
6.		
7.	Physical exercise biochemistry	
8.	Energy requirements.	
9.	Nutrition assessment	
10.	Nutrition Supplements	

№.	Sections and themes	Responsible lecturer
11.		
12.	Regulation of water and electrolyte metabolism in rest and during exercise	
13.	Body composition changes	
14.	Children nutrition	
15.	The history of doping and challenges	
16.	What is doping and anti-doping?	
17.	Why, when and where is doping being used?	
18.	Why is doping prohibited?	
19.	What actions are being taken against doping?	
20.	Supplements and doping	
21.	Doping control procedure	

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.	Gibney M., Vorster H., Kok J. 2002 Introduction to Human Nutrition ISBN 0-63205624-x Oxford, UK		1	No	1
2.	.Jeukendrup, M. Gleeson 2016 Sport Nutrition Human Kinetic, USA		1	No	
3.	A. Skurvydas ir kt 2006 Sveikata ir Fizinis aktyvumas ISBN 9955-622-30-x LKKA, Kaunas		10	No	
4.	R. Lažauskas. Mityba ir sveikata. 2005 Mityba ir sveikata ISBN9955-15-040-8 KMU, Kaunas		30	No	
5.	Praškevičius, A., Biochemija, LSMU, 2005		20	No	2
6.	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	
7.	Pasaulinis antidopingo kodeksas. 2015. http://www.wada-ama.org			No	
8.	WADA Anti-doping Textbook. 2015. www.antidopinglearninghub.org			No	

Additional literature

№.	Title
1.	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.
2.	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.
3.	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.
4.	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
5.	McBride A, Hardie DG. AMP-activated protein kinase: a sensor of glycogen as well as AMP and ATP? Acta Physiol. 2009;196:99–113.
6.	www.antidopinglearninghub.org/en/textbook/what-is-doping
7.	David R. Mottran and Neil Chester. 2015. Drugs in Sports. Chapters 1 and 2
8.	Anti-Doping Convention of the Council of Europe. http://conventions.coe.int/Treaty/en/Treaties/Html/135.htm

№.	Title
9.	Vogliardi S, Tucci M, Stocchero G, Ferrara SD1, Favretto D. 2015. Sample preparation methods for determination of drugs of abuse in hair samples: A review. Anal Chim Acta. 2015 Feb 1;857:1-27.
10.	Hatton CK, Green GA, Ambrose PJ. 2014. Performance-enhancing drugs: understanding the risks. Phys Med Rehabil Clin N Am. 2014 Nov;25(4):897-913

Coordinating lecturer

Position	Degree, surname, name	Schedule №.
Associate Professor		346

Subdivision

Entitlement	Code
Department of Health Promotion and Rehabilitation	2006

Study module teaching form №. 1

Semester		Mode of studies	Structure				Total hours	Credits
			Theory	Seminars	Lab Works	Ind. work		
A	S	D	28	28	4	200	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	12.	1	2	0
2.	1	1	0	13.	1	2	0
3.	1	1	1	14.	2	5	0
4.	1	1	1	15.	1	1	0
5.	1	1	1	16.	2	1	0
6.	1	1	1	17.	2	1	0
7.	1	1	0	18.	2	1	0
8.	1	2	0	19.	2	1	0
9.	1	2	0	20.	2	1	0
10.	1	1	0	21.	2	1	0
11.	1	1	0				
				Total:	28	28	4

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	2-5	20	10	*				0												
Control work	6-7	20	10	*							0									
Control work	8-11	10	10	*										0						
Case analysis (study)	1-11	25	10	*										0						
Oral presentation	2-7	10	5	*										0						
Oral presentation	15-21	26	10	*															0	
Control work	15-21	20	10	*															0	
Exam	2-21	59	30	*															0	
Oral presentation	12-14	10	5				*										0			
Total:	-	200	100																	

Study module teaching form №. 2

Semester		Mode of studies	Structure				Total hours	Credits
			Theory	Seminars	Lab Works	Ind. work		
A	S	N	28	28	4	200	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	12.	1	2	0
2.	1	1	0	13.	2	2	0
3.	1	1	1	14.	2	7	0
4.	1	1	1	15.	1	1	0
5.	1	1	1	16.	2	1	0
6.	1	1	1	17.	2	1	0
7.	1	1	0	18.	2	1	0
8.	1	2	0	19.	2	1	0
10.	1	1	0	20.	2	1	0
11.	1	1	0	21.	2	1	0
				Total:	28	28	4

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	2-5	20	10	*				0												
Control work	6-7	20	10	*						0										
Oral presentation	2-7	10	5	*						0										
Control work	8-11	20	20	*										0						
Case analysis (study)	1-11	54	20	*										0						
Oral presentation	12-14	10	5	*											0					
Control work	15-21	40	20	*												0				
Oral presentation	15-21	26	10	*															0	
Total:	-	200	100																	

Study module teaching form №. 3

Semester		Mode of studies	Structure				Total hours	Credits
			Theory	Seminars	Lab Works	Ind. work		
A	S	N	28	28	4	200	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
Total:	-	0	0																	