



LITHUANIAN SPORTS UNIVERSITY

STUDY MODULE PROGRAMME (SMP)

Module Code	S	273	B	737	Accredited until	2017	06	30	Renewal date
	Branch of Science		Progr.	Registr. №.					

Entitlement

Motor Control, Neuromechanics and Learning

Prerequisites

Anatomy and Physiology

Course (module) Learning Outcomes

№.	Learning Outcomes	Teaching / Learning Methods	Assessment Methods
1		Group work, Interactive lecture	Essay
2		Group work	Essay
3		Case analysis (Case study), Group work	Directed private laboratory work, Essay
4		Laboratory classes	Laboratory notes and report
5		Laboratory classes	Laboratory examination

Main aim

On the basis of the achievements of modern fundamental and applied movement science, to provide students with knowledge and skills: a) to analyse models, mechanisms and technologies of motor control, learning and development, b) to systematize the achievements of modern fundamental and applied interdisciplinary science, and carrying out applied research, to improve motor control and learning technologies / methodologies in practice.

Summary

Study module encompasses: a) mechanics of muscle contraction and relaxation; b) biomechanical and neurophysiological mechanisms, principles and patterns of motor control; c) neuromechanics of running, jumping, throwing and manipulative movements; d) motor learning theories as well patterns, principles and neuroplasticity of learning; e) research methodology of motor control and learning processes; f) application opportunities of fundamental research data in practice.

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.		52 prof. habil.dr. Albertas Skurvydas
2.		195 doc. dr. Dalia Mickevičienė
3.		52 prof. habil.dr. Albertas Skurvydas
4.		195 doc. dr. Dalia Mickevičienė
5.		195 doc. dr. Dalia Mickevičienė
6.		195 doc. dr. Dalia Mickevičienė
7.		52 prof. habil.dr. Albertas Skurvydas
8.		52 prof. habil.dr. Albertas Skurvydas
9.		52 prof. habil.dr. Albertas Skurvydas
10.		52 prof. habil.dr. Albertas Skurvydas
11.		52 prof. habil.dr. Albertas Skurvydas
12.		52 prof. habil.dr. Albertas Skurvydas

Evaluation procedure of knowledge and abilities:

References

№.	Title	Edition in LSU library		In LSU bookstore	Number of ex. in the methodical cabinet of the depart.
		Pressmark	Number of exemplars		
1.	Skurvydas A. Judesių mokslas: raumenys, valdymas, mokymas, reabilitavimas, sveikatinimas, treniravimas, metodologija // Kaunas, LKKA, 2011.		100	Yes	
2.	Skurvydas A. Modernioji neuromotilitacija: judesių valdymas ir proto treniruotė // Kaunas, LKKA, 2011.		50	Yes	
3.	Latash, M.L. Neurophysiological Basis of Movement // Champaign, Illinois: HumanKinetics, 2008.		1	Yes	
4.	Schmidt R.A., Lee T.D. Motor Control and Learning: A Behavioral Emphasis // Champaign, Illinois: HumanKinetics, 2008.		1	Yes	
5.	Enoka, R. Neuromechanics of Human Movement // Champaign, Illinois: HumanKinetics, 2008.			No	
6.	Wolpert, D.M., Diedrichsen, J., Flanagan, J.R.Principles of sensorimotor learning //NatRevNeurosci. 2011 7;12(12). IF: 29.5.			No	
7.	Franklin, D.W., Wolpert, D.M. Computational mechanisms of sensorimotor control // Neuron. 2011, 3;72(3):425-42. IF:14.9.			No	
8.	Krakauer, J.W., Mazzoni, P. Human sensorimotor learning: adaptation, skill, and beyond // Current Opinion Neurobiology, 2011, 21, 1-9. IF: 6.9.			No	
9.	Shadmehr R, Krakauer JW. A computational neuroanatomy for motor control // Exp Brain Res, 2008, 185(3), 359-381. IF: 2.3.			No	
11.	Diamond A, Lee K. Interventions shown to aid executive function development in children 4 to 12 years old // Science. 2011, 19;333(6045):959-64. Review. IF: 31.3.			No	

Additional literature

№.	Title
1.	Wolpert, D.M., Diedrichsen, J., Flanagan, J.R.Principles of sensorimotor learning //Nat Rev Neurosci. 2011 7;12(12). IF: 29.5.
2.	Schiaffino, S., Reggiani C. Fiber types in mammalian skeletal muscles // Physiol Rev. 2011; 91(4):1447-531. IF: 28.
3.	Stergiou, N. Innovative Analyses of Human Movement. – Champaign, Illinois: Human Kinetics, 2004.

Coordinating lecturer

Position	Degree, surname, name	Schedule №.
Professor	Prof. Dr. Hab. Albertas Skurvydas	52

Subdivision

Entitlement	Code
a	2006

Study module teaching form №. 1

Semester	Mode of studies	Structure				Total hours	Credits
		Lectures	Pract.	Lab.	Ind. work		

A	S	D	26	18	0	216	260	10
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Languages of instruction:

Lithuanian	L	English	E	Russian	R	French	F	German	G	Other	Oth.
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Plan of in-class hours

№. of Themes	Academic hours			№. of Themes	Academic hours		
	Lectures	P	L		Lectures	P	L
1.	2	0	0	7.	1	0	0
2.	4	0	2	8.	1	0	4
3.	2	0	1	9.	5	0	0
4.	4	0	4	10.	2	0	2
5.	2	2	3	11.	4	0	0
6.	2	0	0	12.	1	4	0
				Total:	30	6	16

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
Reporting for laboratory work	2,4,5,6	40	30			*						0								
Colloquium	1-8	38	70			*						0								
Total:	-	78	100																	

Study module teaching form №. 2

Semester		Mode of studies	Structure				Total hours	Credits
			Lectures	Pract.	Lab.	Ind. work		
A	S	D	26	18	0	216	260	10

Languages of instruction:

Lithuanian	L	English	E	Russian	R	French	F	German	G	Other	Oth.
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Plan of in-class hours

№. of Themes	Academic hours			№. of Themes	Academic hours		
	Lectures	P	L		Lectures	P	L
1.	2	0	0	7.	1	0	0
2.	4	0	2	8.	1	0	4
3.	2	0	1	9.	5	0	0
4.	4	0	4	10.	2	0	2
5.	2	2	3	11.	4	0	0
6.	2	0	0	12.	1	4	0
				Total:	30	6	16

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
Essay	1-2	20	10	*	0															
Exam	1-8	38	20			*					0									
Reporting for laboratory work	2,4,5,6	40	20			*					0									
Essay	3-4	20	10				*		0											
Essay	5	20	10							*		0								
Exam	9-12	30	20										*					0		
Essay	9-11	40	10										*					0		

[illegible]