NEUROMMECHANICS OF HUMAN MOVEMENT

1	Course Title:	NEUROMMECHANICS OF HUMAN MOVEMENT
2	Course Code:	ANE5018
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	2
7	ECTS Credits Allocated:	5.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Dr. Ögr. Üyesi YAHYA YILDIRIM
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	yahyayildirim@uludag.edu.tr, tlf: 02242940689 Bursa Uludağ Üniversitesi, Spor Bilimleri Fakültesi, Antrenörlük Eğitimi Bölümü, PK: 16059, Görükle Kampüsü, Nilüfer, Bursa
17	Website:	
18	Objective of the Course:	To teach objective test methods used in the evaluation of athlete performance and rehabilitation (measurement of muscle strength, muscle activation patterns, muscular endurance and fatigue). To teach the basics of muscle physiology; to discuss adaptations that occur with sport and exercise.
19	Contribution of the Course to Professional Development:	It provides the evaluation of athlete performance by understanding the neuromechanics of movements.
20	Learning Outcomes:	
	1	Knows neuromechanical concepts
	2	Knows what electromyography is and how to make electromyographic measurements in athletes
	3	Evaluates muscle strength and the results of training adaptations with objective test methods
	4	Examines the effects of muscle contraction types and related exercise practices on athletes.
	5	Examines articles on the relationship between muscle fatigue and sports performance
	6	Examines articles on balance and proprioception analysis tests.
	7	Examines articles on sample exercise and rehabilitation practices as a result of sensory-motor evaluations.
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21	Course Content:	

Course Content:

Week	Theoretical	Practice

1	Introduction to neuromechanics and neuromechanical concepts	
2	Movement and nervous system	
3	Motor unit, excitable cells and membranes,	
4	Neuron (properties, membrane currents, action potential, synaptic transmission)	
5	Characteristics of muscles (contraction rate, motor unit strength, fatigue, motor unit types, muscle fiber types)	
6	Strength and endurance testers: isometric, concentric, eccentric and isokinetic assessment.	
7	Evaluation of maximal strength and muscle activation in athletes with electromyography	
8	Endurance, fatigue assessment and sample power spectrum analyzes in athletes with electromyography	
9	Literature studies on EMG evaluations in athlete performance	
10	Literature studies on EMG evaluations in athlete performance	
11	Characteristics of muscle and tendon mechanics during movement, article studies	
12	Balance and proprioception analysis tests	
13	Literature studies on balance and proprioception analysis tests	
14	Literature studies on sensory-motor evaluations in sport rehabilitation	

22	Textbooks, References and/or Other Materials:	1. Motor Kontrol - Theories, Experiments, and Applications - , Editors.: Frederic Danion, Mark L. Latash. Oxford University, 2011 2. Sport & Exercise Biomechanics - Editors: Elizabeth Owen, Auther. P. Grimshaw, A Lees, N. Fowler, A. Burden, 2006. 3. Neuromechanics of Human Movement Volume. Fifth Edition. Editor: Roger M. Enoka, Human Kinetics, 2008. 4. Human Muscle Fatigue. Editors:Craig Willams and Sebatian Ratel. Routledge Taylor &Francis Group, 2009
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	0	0.00
Quiz	0	0.00
Home work-project	4	40.00
Final Exam	1	60.00
Total	5	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Homework and written exam

24	**ECTS / WORK LOAD TABLE**

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	4.00	56.00
Homeworks	4	12.00	48.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			148.00
Total work load/ 30 hr			4.93
ECTS Credit of the Course			5.00

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	0	3	0	2	0	0	0	0	4	2	0	0	0	0	0	0
ÖK2	0	5	0	0	0	0	3	0	0	4	0	0	0	0	0	0
ÖK3	3	0	0	4	0	0	4	0	0	5	0	0	0	0	0	0
ÖK4	4	0	4	0	0	3	0	0	4	0	0	0	0	0	0	0
ÖK5	3	3	0	0	0	5	0	0	3	3	0	0	0	0	0	0
ÖK6	3	0	3	0	0	0	5	0	4	4	0	0	0	0	0	0
ÖK7	0	4	0	0	2	0	0	5	0	3	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**