

Study programs: Recreation			
Type and level of studies: Basic professional studies			
Course title: BIOMECHANICS AND BASICS OF MOTOR CONTROL			
Lecturer or lecturers (for lectures): Ilic B. Dusko			
Lecturer / Associate (for practice): Mrdakovic D. Vladimir			
Course status: Obligatory			
ECTS: 6			
Condition: None			
<p>Course objectives is to introduce students about the exact measurements, assessment and study of human movement. The aim is to enable student to diagnose and analyze the movement, to determine the postural status in static and dynamic positions, and to optimize exercises during training by combining theoretical knowledge in the field of mechanics, anatomy and physiology, and empirically derived information.</p>			
<p>Course outcome. It is expected that every student will become familiar with and be able for interpretation basic biomechanical variables and immediately apply them, as well as to gain knowledge of basic laws of adaptation of biological systems. It is expected that theoretical and practical knowledge in the field of biomechanics will enable the students in this field to evaluate the adaptation of the muscular, bone and joint system depending on the various factors that affect them; enable them to analyze basic and complex techniques of movement within certain sports branches; to evaluate movement technique depending on the kinematic and dynamic properties of the locomotor system and the environment conditions.</p>			
<p>Contents description: <i>Theoretical instruction</i> - Muscle mechanics; Bones and joints; Basics of movements (Levers of locomotor system and their function; Optimal joint angles); Kinematics of locomotor system (Basic kinematic locomotion values; Kinematics of body in the flight phase; Kinematics of fundamental motion; Basic kinematic schemes of complex movements; Exchange between frequency and motion amplitudes in cyclic and acyclic movements); The dynamics of locomotor system (External forces and their adequate application in sports; Method of forces diagram; Impulse; Work, power, energy and their functional relations; Assessment of force and power in motion); Other areas (Movements in fluid; Principles of the efficiency of various sports techniques; Function of two-joints muscles; Scaling of force and power); <i>Practical classes</i> - 1. The application of analytical method and method of parallel forces for determining the location of the center of gravity of the body. 2. Static analysis of the position of one or more segments of the body or the whole body. 3. Determination of kinematic variables. 4. Determination of dynamical variables. 5. Seminars: Scaling of force and power, Electromyography, etc.</p>			
<p>References: 1) Ilic, B.D., Mrdakovic, D.V. (2009). Neuromehanicke osnove pokreta (Neuromechanical basis of movement); 2) Jaric, S. (1997). Biomehanika humane lokomocije (Biomechanics of human locomotion); 3) Jaric, S. (1997). Praktikum iz Biomehanike (Practicum from Biomechanics);</p>			
No. of active classes			Other classes:
Lectures: 3	Practical classes: 2	Other forms of teaching:	
		Study research work:	
Teaching method: Theoretical lectures; practical lectures; Defense of seminar papers			
Knowledge assessment (maximum score 100)			
Exam prerequisites	points	Final examination	points
Class Activities	25	Written examination	30
Practical instruction	15	Practical examination	
Preliminary exam / Colloquium	15	Oral examination	
Seminar papers	15	

