

Caraterização da Unidade Curricular / Characterisation of the Curricular Unit

Designação da Unidade Curricular / Curricular Unit:	[3181200602] Biomecânica [3181200602] Biomechanics		
Plano / Plan:	2007/2008		
Curso / Course:	Desporto e Atividade Física Sport and Physical Activity		
Grau / Diploma:	Licenciado		
Departamento / Department:	CDM - Ciências do Desporto e Motricidade		
Unidade Orgânica / Organic Unit:	Escola Superior de Educação de Viseu		
Área Científica / Scientific Area:	Ciências da Motricidade		
Ano Curricular / Curricular Year:	1		
Período / Term:	S1		
ECTS:	4		
Horas de Trabalho / Work Hours:	0108:00		
Horas de Contacto/Contact Hours:			
(T) Teóricas/Theoretical:	0030:00	(TC) Trabalho de Campo/Fieldwork:	0000:00
(TP) Teórico-Práticas/Theoretical-Practical:	0015:00	(OT) Orientação Tutorial/Tutorial Orientation:	0000:00
(P) Práticas/Practical:	0000:00	(E) Estágio/Internship:	0000:00
(PL) Práticas Laboratoriais/Practical Labs:	0000:00	(O) Outras/Others:	0000:00
(S) Seminário/Seminar:	0000:00		

Docente Responsável / Responsible Teaching

[2001] Abel Aurélio Abreu De Figueiredo

Outros Docentes / Other Teaching

[2353] Jorge Filipe de Lima Arede

Learning Outcomes of the Curricular Unit

1. Understanding the role of biomechanics in the interpretation of human movement
2. Using knowledge of static and anthropometry in the description and explanation of body positions
3. Using knowledge of kinematics and kinometry in the description and explanation of human movement
4. Using knowledge of kinetics and dynamometry in the description and explanation of human movement
5. Acquire the basics of some specific biomechanical topics like Impulse, Impact and Fluid Dynamics, and methodologies to determine.
6. Determination of body center of gravity with numeric methods.

Learning Outcomes of the Curricular Unit (Lim:1000)

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Syllabus (Lim:1000)

1. Conceptual location of Biomechanics
2. Modeling and representing in Biomechanics
3. Mechanic's parameters in Biomechanics
 - 3.1. Stability and equilibrium conditions (STATIC);
 - 3.2. Translation and rotation/angular movements (kinematics);
 - 3.3. As Newton's laws in the displacement body (DYNAMIC);
 - 3.4. Relationship between inertia, moment of inertia, speed and acceleration;
 - 3.5. The balance in linear and angular displacements;
 - 3.6. Mechanical energy and its components;
 - 3.7. Mechanical work and energy exchange;
 - 3.8. Mechanical efficiency
4. Observation and mechanical analysis
5. Biomechanical particularities: The impulse, the impact, aerial trajectories; fluid dynamics

Demonstration of the syllabus coherence with the curricular units' learning objectives

The contents relating to Static (mechanic parts that relate to body's balance) and Dynamic (mechanic parts that relate to body's movement) are the necessary tools for description and explanation of the different body positions and the different movements of the human body. The modeling of the human body, previously applied, allows to simplify this study with no disregard to its specification.

Teaching Methodologies (Including evaluation; Lim:1000)

The theoretical foundations regarding this U.C. will be presented in the theoretical sessions. In laboratory practice sessions students take contact with the instruments and methodologies used in the analysis and diagnosis of human movement, and make use of knowledge acquired during the theoretical lessons A written test (65%), including also practical issues to perform at the end of the semester. Practical group work (35%) to develop during laboratory practices classes.

Demonstration of the coherence between the teaching methodologies and the learning outcomes

The theoretical sessions aimed to addressing the essential theoretical foundations to the description and explanation of different body positions and movements of the humans. The laboratory practices intended to use the knowledge gained in the theoretical lessons, develop skills to use tools and methodologies in the analysis and diagnosis of body positions and human movement.

Bibliografia / Bibliography (Lim:1000)

SEBENTAS DO CURSO

Figueiredo, A. (2019). Biomecânica no Desporto e Atividade Física - Sebenta de Apoio aos Alunos. Escola Superior de Educação de Viseu.

LIVROS PRINCIPAIS

Bartlett, R. (2014). Introduction to Sports Biomechanics: Analysing Human Movement Patterns. Routledge. 4ª ed.

Cleather, D. (2021). Force: The biomechanics of training. KMA Press

Esparza-Ros, F.; Vaquero-Cristóbal, R.; Marfell-Jones, M. (2019). International Standards for Anthropometric Assessment: Restricted profile. UCAM Universidad Católica de Murcia.

Hall, S. (2021). Biomecânica Básica. Guanabara Koogan. Rio de Janeiro. 8ª ed.

Knudson, D. (2007). Fundamentals of Biomechanics. Springer

McGinnis, P. (2013). Biomechanics of Sport and Exercise, Human Kinetics Publishers, 3ª ed.

Guzmán Quesada, A. (2022). Biomecânica aplicada al entrenamiento de fuerza. Editorial Transverso.

Watkins, J. (2014). Fundamental Biomechanics of Sport and Exercise. Routledge.