School of Education
Course Unit Syllabus

Level of qualification:
First cycle (EQF level 6) - Bachelor
Study cycle:
Sports

Course Unit: **956334** – **Movement Analysis**

Year 2	Semester 4	ISCED Code: 813	ECTS: 4,0

Tipe of Course Unit: Compulsory   **Delivery Mode:** Face-to-face   **Language of Instruction:** Portuguese

COURSE COORDINATOR: Nuno Eduardo Maraues de Loureiro

HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
100	25		20						55

Prerequisites (if applicable):

LEARNING OUTCOMES (knowledge, skills and competence)

- Recognize the worth of movement analysis in sports training;

- Identify the fundamental steps of that analysis;

- know and be able to utillize some of the equipments of registry, treatment and analysis currently employed;

- know some of the principles of Physics and biomechanics that underly the technical gestures advised to the good practice of several sports;

- know and utilize the movement analysis technics and the biomechanics principles to justify or correct technical gestures of prospective trainees.

CONTENTS

- Fundamentals of movement analysis in sports.

- Equipments and methods.

- Position, velocity and linear acceleration.

- Position, velocity and angular acceleration.

- Projectils movement.

- Newton laws.

- Impulse and linear momentum.

- Torque and center of mass.

- Angular kinetics.

- Work, power and energy.

- Collisions.

- Friction.

- Hydrodynamics: drag.

- Hydrodynamics: propulsion

- Gait and running analyse.

DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

The Analysis of Movement Course aims to prepare the student, at an introductory level, to planify and execute the registry of movements in a sports context and, through subsequent treatment and interpretation of that information, to prescribe and justify changes to the technical execution of the sportsmen at his care to enhance their perfomance.

Because, in modern times, the movement analysis at a sports level is made mainly through cinemetrics, technics, instruments and appropriate software of this area will be manipulated by the students in real life environments in particular the gait and running analyse.

TEACHING METHODOLOGIES

- Lecturing with multimedia support.

- Discussion of practical cases related with the theoretical principles.

- Exercises resolution.

- Research work about pratical applications in the course area.

- Use of registry equipment and analysis software dedicated to physical work.

DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES

The theoretical and pratical nature of this course justifies the utilization, in a complementary way, of active methodgies with a strong practical and experential component associated with the theoretical lecturing supported by multimedia and consolidated through questioning, debate and exercises involving the calculus of scalar and vectorial quantities.

EVALUATION METHODS

- Theoretical and theoretical-practical components evaluated by two written tests or a final exam.

- Practical component evaluated by a group work.

MAIN BIBLIOGRAPHY

Bartlett, R. (2007). Introduction to Sports Biomechanics. Analysing Human Movement Patterns. 2nd Edition. New York: Routledge.

Blazevich, A. (2011). Biomecánica Deportiva. Manual para la mejora del rendimiento humano. Editorial Paidotribo S.A.. Buenos Aires.

Griffiths, I.W. (2005). Principles of Biomechanics & Motion Analysis. Lippincott Williams & Wilkins. Philadelphia.

Hall, S. (2005). Biomecânica Básica. 4ª Edição. Guanabara Koogan S.A.. Rio de Janeiro.

McGinnis, P. (2013). Biomechanics of Sports and Exercise. 3rd Edition. Human kinetics.

Pérez-Soriano, P. coord. (2018). Metologia y Aplication Practica de la Biomecánica Deportiva. Editorial Paidotribo S.A.. Buenos Aires.

Pérez-Soriano, P. e Lhana-Belloch, S. (2014). Biomecánica Básica Aplicada a la Actividade Física y el Deporte. Editorial Paidotribo S.A.. Buenos Aires.