SUBJECT DESCRIPTION (GFUC)					**MODEL** PED.007.03	

Course	**Sport**						
Curriculum Unit	**Learning and Motor Control**						
Academic Year	2023-24	*Year*	2º	*Period*	1º	*ECTS*	5
Regimen	Required	*Working Time (horas)*		*Total*: 135		*Contact*: 60	
Professor(s)	José Eduardo Teixeira						
☐ *Responsible* ☒ *Coordinator (a)* ☐ *Regente*	*UC or Disciplinary Area/Group* *(cf. each school's situation)*	Carolina Vila Chã					

<div style="text-align:center">**PLANNED GFUC**</div>

1. LEARNING OBJECTIVES

After complete this unit the student should be able to:

A) Show fundamental theoretical bases on learning and motor control by:
- Understanding the nature of voluntary movement and identifying the main conditioning variables;
- Understanding and applying different classification systems to motor skills;
- Identifying and describing the main central nervous system structures and their main functions involved in the movement production;
- Discussing the roles of sensory systems in the realization and correction of movement;
- Explaining theories of control and motor learning.

B) Assess motor learning and motor performance by:
- Identifying and applying motor performance and motor learning measures;
- Properly collecting data, applying statistical methods and interpreting the results.

C) Discuss features that distinguish an expert motor skill performer from a non-expert by:
- Identifying the characteristics of learners as they progress through the stages of learning;
- Making inferences on learning through performance curves and retention tests.

D) Identify and explain the variables that affect motor learning by:
- Identifying motor learning variables and its relationship with acquisition of motor skill;
- Applying concepts of the motor learning in the design of motor learning situations.

2. PROGRAM CONTENTS

The program of this curricular unit are subdivided in five blocks, specifically:

Block A – Concepts and terminology and fundamental
1. Definition of basic terminology (actions, movements, tasks, motor skills and motor capabilities);
2. Nature of the voluntary movement and its constraints (environment, task and individual);
3. Classification systems of motor skills.

Block B – Fundamentals of motor control
1. Neurophysiological basis of motor actions:
   a. General organization and function of the nervous system;
   b. Sensorial systems, sensation and motor control;
   c. Motor system and its organizational principles.

2. Motor control theories:
   a. General/classical theories;
   b. Adam's Closed Loop Theory;
   c. Schmidt's Motor Program Theory;
   d. Dynamic Pattern Theory.

3. Fundamental characteristics of motor control motor skills:
   a. Postural Control;
   b. Mobility (locomotion e running);
   c. Apreension and manipulation of objects.

4. Preparing for action and conditioning factors:
   a. The characteristics of the task and environment (number of stimulus-response, complexity and accuracy of the task);
   b. Characteristics of the individual (attention, activation and anticipation).

Block C – Basics of the neurophysiological motor learning
1. Neural plasticity, memory and learning;
2. Plasticity and forms of implicit and explicit learning;
3. Procedural learning.

Block D – Assessment of the progression of learning and motor performance

1. Motor performance measures;
2. Motor learning measures;
3. Stages of motor learning.

Block E – Preparing motor learning situations
1. Demonstration and instruction;
2. Augmented feedback;
3. Variability and specificity of practice;
4. Amount and distribution of practice;
5. Design and evaluation of learning situations.

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

This UC, through its syllabus, aims to develop basic knowledge within motor learning and motor control, as well as, competencies in assessment and management of teaching process-learning. Based on this assumption the selected contents aim to achieve the defined objectives (Table 1).

Table 1 – Demonstration of the syllabus coherence with the curricular unit's objectives.

Syllabus content	⇨	Objetivos de aprendizagem
A1, A2, B1 & B2		Item lines A
D1 & D2	⇨	Item lines B
D2 & D3		Item lines C
E1 & E5		Item lines D

4. BIBLIOGRAPHY

*Mandatory***:**

Magill, R (2012): Motor learning and control. 12th Edition. New York: McGraw-Hill Publishing.

Schmidt, R., & Wrisberg, C. (2010): Motor Learning and Performance. A problem-based learning approach. Human Kinetics.

Shumway-cook, A , Woollacott, M. (2011): Motor control: Theory and practical applications. 4th ed. Baltimore, Williams & Wilkins.

*Recommended***:**

Coker, C. A. (2017). Motor learning and control for practitioners. Routledge.

Godinho, M., Mendes, R., Melo, F, & Barreiros, J. (1999): Controlo Motor e Aprendizagem: Fundamentos e Aplicações, Ed. FMH/UTL

Godinho, M., Mendes, R., Melo, F, & Barreiros, J. (2000): Controlo Motor e Aprendizagem: Trabalhos Práticos, Ed. FMH/UTL

Kandel, R., Schwartz, J., Jessell, T. (2000): Principles of Neural Science. 4th ed. McGraw-Hill Medical

Latash, M.L. (1998): Neurophysiological basis of movement. Human Kinetics.

Porter, Rebecca E. (2002). Motor Control: Theory and Practical Applications, 2nd Ed. Physical Therapy 82.1: 107.

Purves, D., Augustine, P., Fitzpatrick, D., Hall, D.,LaMantia, A., Mcnamara,J. Williams,M. (2004): Neuroscience. 3rd ed. Sinauer Associates, Inc. Publishers

Singer, R. (1986): El Aprendizaje de Las Acciones Motrices en el Deporte, Ed. Hispano Europea, S.A., Barcelona

Teixeira, L. (2006): Controle Motor. Manole.

Utley, A. (2018). Motor control, learning and development: Instant notes. Routledge.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Teaching Methodologies

The syllabus taught will be operated through:

(1) Oral exposition and through interactive multimedia programs on specific course contents;

(2) Research work, analysis and interpretation of text / scientific articles under supervision;

(3) Application of the knowledge acquired during the theoretical and practical lectures through the implementation of laboratory activities that allows to (a) data collection and interpretation of the results; (b) Elaboration of reports; and (c) development of motor learning experiences.

Evaluation Rules

The student evaluation will follow the internal regulation for continuous evaluation of the student. The continuous evaluation will focus on student performance in the following components/evidence:

(1) Two written tests – 60% (average tests 9.5 values and in each test the classification cannot be less than 8 values);

(2) Group work (analysis of scientific articles, conducting laboratory work and its presentation, etc.) – 40% (average of the work cannot be less than 8 values).

If students do not achieve a minimum score of 9.5 during the continuous assessment, they will have the possibility to take a final exam with a weighting of 100%.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The methods chosen were selected in order to monetize and maximize the acquisition of content associated with each objective:

(1) Exposure of content (orally and through digital means) - this methodology is used to display the content associated with all learning objectives;

(2) Research work, analysis and interpretation of text/ articles. This methodology is used mainly to consolidate the content associated with the objectives of the items in points B and D.

(3) Application of knowledge acquired during the theoretical and practical class through the implementation of laboratory activities and preparation of their respective reports. This methodology is used to consolidate the acquisition of content items associated with all of the points A, C and D.

7. ATTENDANCE

Students who did not pass the course last year, and who have proof of overlapping hours with a course in the year in which they are enrolled, must agree with the teacher on the attendance regime to be followed. However, attendance at all assessment times is compulsory. Under the specific attendance regime laid down for this course, students are required to be punctual, and failure to comply with this rule should only be exceptional and justified. In addition, the use of any type of mobile platform in the classroom is forbidden without the express authorisation of the teacher, and infringement of this rule may result in disciplinary proceedings.

Date

4th October, 2023Clique

SIGNATURES

(Associate Prof. Carolina Júlia Félix Vila-Chã, PhD)

(José Eduardo Teixeira, PhD – Invited Associate Professor)