



UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: ADVANCES IN SPORT BIOMECHANICS AND EXERCISE PHYSIO
Type: CORE COURSE
Degree: 2323 - MASTERS DEGREE PROGRAMME IN SPORT SCIENCE
Center: 8 - FACULTY OF SPORT SCIENCES
Year: 1

Main language: Spanish
Use of additional languages:
Web site:

Code: 310494
ECTS credits: 6
Academic year: 2023-24
Group(s): 40
Duration: First semester
Second language: English
English Friendly: Y
Bilingual: N

Lecturer: LUIS MARIA ALEGRE DURAN - Group(s): 40				
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2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

Not established

4. Degree competences achieved in this course

Course competences

Code	Description
E01	Manage the different research techniques in the Sciences of Physical Activity and Sport, identifying the differential facts of the study carried out.
E04	Design research projects in the Sciences of Physical Activity and Sport adjusting to the conditions of the field of study.
E09	Use scientific methodology to study physiological variables linked to sports performance
E11	Apply advanced biomechanical analysis methodologies in experimental designs.
G04	Carry out a critical analysis, on the development and presentation of new and complex ideas in the field of study of physical activity for health and sport performance, by means of an informed assessment.
M016	To use scientific methodology for the study of physiological variables linked to sports performance. (G1, G2, G3, G4, E1, E2, E3, E4, E9, E11).
M018	To apply research designs related to fatigue and recovery of the athlete. (G1, G2, G3, G4, E1, E2, E3, E9, E11, E12)
M019	To apply advanced methodologies of biomechanical analysis in physical activity and sport. (G1, G2, G3, E1, E2, E3, E4, E10).
M020	To apply experimental designs used in biomechanical research. (G1, G2, G3, E1, E2, E3, E4, E10).

5. Objectives or Learning Outcomes

Course learning outcomes

Description

- To learn about research lines related to nutrition, fatigue, health and recovery of the athlete.
- To prepare a critique of a scientific article in biomechanics.
- To utilize biomechanical methodologies to solve a specific research question in a sport modality.
- To apply the scientific methodology for the study of the most influential physiological variables in sports performance.
- To interpret the physiological and nutritional assessment based on the differential aspects related to age and gender.

Additional outcomes

6. Units / Contents

Unit 1:

Unit 2:

Unit 3:

Unit 4:

Unit 5:
 Unit 6:
 Unit 7:
 Unit 7.1
 Unit 7.2
 Unit 7.3
 Unit 7.4
 Unit 7.5
 Unit 7.6
 Unit 8:
 Unit 9:
 Unit 10:
 Unit 11:

7. Activities, Units/Modules and Methodology							
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	E01 M020	0.55	13.75	Y	N	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	E11 M019 M020	0.2	5	Y	N	
Analysis of articles and reviews [OFF-SITE]	Reading and Analysis of Reviews and Articles	E01 M020	1.25	31.25	Y	N	
Other off-site activity [OFF-SITE]	Project/Problem Based Learning (PBL)	E01 E11 M019 M020	1	25	Y	N	
Class Attendance (theory) [ON-SITE]	Lectures	M018	0.25	6.25	Y	Y	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	M018	0.11	2.75	Y	Y	
Analysis of articles and reviews [OFF-SITE]	Reading and Analysis of Reviews and Articles	M018	0.6	15	Y	N	
Writing of reports or projects [OFF-SITE]	Problem solving and exercises	M018	0.54	13.5	Y	Y	
Workshops or seminars [ON-SITE]	project-based learning	E04	0.36	9	Y	N	
Off-site theoretical learning [OFF-SITE]	Individual presentation of projects and reports	G04	1.14	28.5	Y	N	
Total:			6	150			
Total credits of in-class work: 1.47			Total class time hours: 36.75				
Total credits of out of class work: 4.53			Total hours of out of class work: 113.25				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Fieldwork assessment	25.00%	25.00%	
Assessment of active participation	5.00%	0.00%	
Final test	0.00%	25.00%	
Final test	20.00%	25.00%	
Progress Tests	25.00%	0.00%	
Assessment of problem solving and/or case studies	25.00%	0.00%	
Final test	0.00%	25.00%	
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Unit 1 (de 11):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	6
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	14.5
Other off-site activity [AUTÓNOMA][Project/Problem Based Learning (PBL)]	14
Unit 2 (de 11):	

Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	6
Other off-site activity [AUTÓNOMA][Project/Problem Based Learning (PBL)]	6
Unit 3 (de 11):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	2
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	5
Other off-site activity [AUTÓNOMA][Project/Problem Based Learning (PBL)]	5
Unit 4 (de 11):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	2
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	8
Other off-site activity [AUTÓNOMA][Project/Problem Based Learning (PBL)]	7.75
Unit 5 (de 11):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	3.25
Other off-site activity [AUTÓNOMA][Project/Problem Based Learning (PBL)]	3.25
Unit 6 (de 11):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1.25
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	2.15
Unit 7 (de 11):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	2.75
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	12.85
Writing of reports or projects [AUTÓNOMA][Problem solving and exercises]	13.5
Workshops or seminars [PRESENCIAL][project-based learning]	28
Off-site theoretical learning [AUTÓNOMA][Individual presentation of projects and reports]	9
Unit 8 (de 11):	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Unit 9 (de 11):	
Activities	Hours
Workshops or seminars [PRESENCIAL][project-based learning]	3
Off-site theoretical learning [AUTÓNOMA][Individual presentation of projects and reports]	9
Unit 10 (de 11):	
Activities	Hours
Workshops or seminars [PRESENCIAL][project-based learning]	3
Off-site theoretical learning [AUTÓNOMA][Individual presentation of projects and reports]	9
Unit 11 (de 11):	
Activities	Hours
Workshops or seminars [PRESENCIAL][project-based learning]	3
Off-site theoretical learning [AUTÓNOMA][Individual presentation of projects and reports]	10.5
Global activity	
Activities	hours
Off-site theoretical learning [AUTÓNOMA][Individual presentation of projects and reports]	37.5
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	10
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	36.75
Other off-site activity [AUTÓNOMA][Project/Problem Based Learning (PBL)]	36
Class Attendance (theory) [PRESENCIAL][Lectures]	6.25
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	2.75
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	15
Class Attendance (theory) [PRESENCIAL][Lectures]	14
Writing of reports or projects [AUTÓNOMA][Problem solving and exercises]	13.5
Workshops or seminars [PRESENCIAL][project-based learning]	37
Total horas: 208.75	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Guazzi M, Adams V, Conraads V, Halle M, Mezzani A, Vanhees L, Arena R, Fletcher G, Forman D, Kizman D, Lavie C, Myers J.	Clinical recommendations for cardiopulmonary exercise testing data assessment in specific patient populations				2012	126:2261-2274
Alegre LM1, Aguado X, Rojas-	Load-controlled moderate and					

Martín D, Martín-García M, Ara I, Csapo R.	high-intensity resistance training programs provoke similar strength gains in young women. http://www.ncbi.nlm.nih.gov/pubmed/24828840			2015
Alegre LM1, Ferri-Morales A, Rodríguez-Casares R, Aguado X.	Effects of isometric training on the knee extensor moment-angle relationship and vastus lateralis muscle architecture. http://www.ncbi.nlm.nih.gov/pubmed/25099962			2014
Blazevich AJ	Effects of physical training and detraining, immobilisation, growth and aging on human fascicle geometry. http://www.ncbi.nlm.nih.gov/pubmed/17123325			2006
Hansen, Sue, Stringer & Whipp	Principles of exercise testing and interpretation.		0-7817-4876-3	
McArdle, Katch & Katch	Exercise Physiology. Nutrition, energy and human performance	Lippincott Williams and Wilkins	9781608318599	2009
Tipton, Sawka, Tate & Terjung	ACSM's Advances exercise physiology		0-7817-4726-0	
Alcazar J, Rodríguez-Lopez C, Ara I, Alfaro-Acha A, Rodríguez-Gómez I, Navarro-Cruz R, Losa-Reyna J, García-García FJ, Alegre LM.	Force-velocity profiling in older adults: An adequate tool for the management of functional trajectories with aging. https://pubmed.ncbi.nlm.nih.gov/29567100/			2018
Alcazar J, Rodríguez-Lopez C, Ara I, Alfaro-Acha A, Mañas-Bote A, Guadalupe-Grau A, García-García FJ, Alegre LM.	The Force-Velocity Relationship in Older People: Reliability and Validity of a Systematic Procedure. https://pubmed.ncbi.nlm.nih.gov/29126339/			
Maffiuletti NA, Aagaard P, Blazevich AJ, Folland J, Tillin N, Duchateau J.	Rate of Force Development: Physiological and Methodological Considerations https://pubmed.ncbi.nlm.nih.gov/26941023/			2016