

Course guide

Year 2024/2025 281003 - Biochemistry

Information about the subject

Degree: Bachelor of Sciences of Physical Activity and Sport

Faculty: Faculty of Physical Activity and Sport Sciences

Code: 281003 Name: Biochemistry

Credits: 6,00 ECTS Year: 1 Semester: 1

- Module: 1) Common Basic Training Module.
- Subject Matter: Biochemistry Type: Basic Formation

Field of knowledge: Basic Sciences

Department: Basic Sciences and Cross-disciplinary Subjects

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:





Module organization

1) Common Basic Training Module.

Subject Matter	ECTS	Subject	ECTS	Year/semester
Psychology	12,00	Basic Psychology	6,00	1/1
		Sports Psychology	6,00	2/1
Human Anatomy	6,00	Human Anatomy	6,00	1/1
Biochemistry	6,00	Biochemistry	6,00	1/1
Human Physiology	6,00	Human Physiology	6,00	1/2
Statistics	6,00	Statistics	6,00	1/2
Sociology	6,00	Sociology. Sports Sociology	6,00	2/2
History of physical activity	6,00	History of Physical Activity	6,00	2/2





Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 Understanding and assimilation of the concepts including in the content of the subject .
- R2 Ability to write an understandable and organized text over different aspects of biochemistry.
- R3 To be able to search bibliographic information from different sources and analyzes it with critical and constructive spirit.
- R4 Capacity to work in a biochemistry laboratory, performing correctly the basic operations and observing the corresponding norms of security. As well as a correct understanding of the planning, development and purpose of the experience.
- R5 Collaboration with the lecturer and the companions throughout the learning process: Attendance to theoretical, practical, or tutoring sessions; Teamwork; Respect in dealing; Observing of the rules in the organization of the subject to the benefit of all.





Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

GENER	AL		Weig	hting	1
		1	2	3	4
CG1	Understanding scientific literature in English and other important languages widely used in the scientific field achieving a good management of information			x	
CG3	Develop skills to solve problems through decision-making		X		
CG4	Transmit any information regarding the contents of body expression both in writing and orally				x
CG5	Plan and organize any activity efficiently				x
CG6	Develop interpersonal skills and teamwork, both international and domestic contexts and in interdisciplinary teams and non-interdisciplinary		x		
CG7	Be capable of critical reasoning using the knowledge gained				X
CG9	Knowing and complying with the professional ethics necessary to work				x
CG10	Develop skills to adapt to new situations and autonomous learning				x
CG11	Develop skills for creativity, initiative and entrepreneurship				x
CG14	Use Internet well as communication and as a source of information				x
CG18	Being able to assess themselves		x		

SPECIFIC	Weighting
	1 2 3 4





CE1	Knowing and understanding the contents within the scope of Physical Activity and Sports Science	X	
CE2	Acquiring the basic scientific knowledge to different areas of Physical Activity and Sports and understanding literature in the field of physical Activity sports in English and in the other important languages widely used in the scientific field achieving a good management of information	x	
CE11	Promote and evaluate various expressive forms	x	
CE18	Select and know how to use the most appropriate teaching materials and resources for each type of activity		X

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R4, R5	70,00%	Written/oral and/or practical tests.
R5	10,00%	Active participation.
R2, R3, R4, R5	20,00%	Attendance at interviews, seminars and practical activities.

Observations

To pass the subject in the 1st enrolment will be essential:

Those students having a portion of the suspended evaluation approved average, will crash you rating 4.5 until the portion is exceeded.





Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 Exhibition of contents by the teacher.
- M2 Dynamics and group activities.
- M3 Resolution of problems and cases.
- M4 Laboratory practices.
- M5 Discussion in small groups.
- M7 Internship assistance.



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IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
PRACTICAL /SEMINAR CLASS: Dynamics and group activities. Resolution of problems and cases. Laboratory practices. Data search in a computer room, library Meaningful construction of knowledge through the interaction and activity of the student M2, M3, M5	R2, R3, R4, R5	16,00	0,64
TUTORY: Learning supervision, evolution. Discussion in small groups. Resolution of problems and cases. Presentation of results before the teacher. Presentation of schemes and indexes of the proposed works.	R2, R3, R5	2,00	0,08
M5			
EVALUATION: Set of oral and / or written tests	R1, R2, R3, R4, R5	2,00	0,08
the oral presentation of the final project.			
M2, M3			
THEORETICAL CLASS: Presentation of content by the teacher. Competency analysis. Demonstration of skills, abilities and knowledge in the classroom. M1, M2, M5	R1, R4, R5	40,00	1,60
TOTAL		60,00	2,40





LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
GROUP WORK: Problem solving. Preparation of exercises, works, memories, to exhibit or deliver in classes and / or in tutoring. M2, M3	R1, R2, R3, R4, R5	20,00	0,80
AUTONOMOUS WORK: Study, Individual preparation of exercises, works, memories, to exhibit or deliver in classes and / or in tutoring. Platform activities or other virtual spaces.	R1, R2, R3, R4, R5	70,00	2,80
TOTAL		90,00	3,60





Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents	
DIDACTIC UNIT I: STRUCTURE OF BIOMOLECULES AND CATALYSIS	SUBJECT 1. Introduction to the chemistry of the life. Cellular chemical and genetic background. Evolutionary foundations.SUBJECT 2. The water.SUBJECT 3. Amino acids, peptides and proteins. Structure. Properties. Classification. Functions. Methods of separation and purification. Methods of quantification.SUBJECT 4. Enzymes. Kinetic enzymatic. Mechanisms. Regulating	
	enzymes.SUBJECT 5. Carbohydrates. Structure. Classification. Functions.SUBJECT 6. Lipids. Structure. Classification. Functions.SUBJECT 7. Nucleic nucleotides and acids.SUBJECT 8. Vitamins and coenzymes.SUBJECT 9. Biological membranes and transport.	
DIDACTIC UNIT II: BIOENERGETICS AND METABOLISM	SUBJECT 10. Principles of cellular bioenergetics. ATP.SUBJECT 11. Catabolism and production of the energy of the phosphate bond.SUBJECT 12. Biosynthesis and use of the energy of the phosphate bond.	
DIDACTIC UNIT III: THE GENETIC INFORMATION FLOW	SUBJECT 13: Replication, transcription and translation of the genetic information.	





Temporary organization of learning:

Block of content	Number of sessions	Hours
DIDACTIC UNIT I: STRUCTURE OF BIOMOLECULES AND CATALYSIS	10,00	20,00
DIDACTIC UNIT II: BIOENERGETICS AND METABOLISM	16,00	32,00
DIDACTIC UNIT III: THE GENETIC INFORMATION FLOW	4,00	8,00

References

BASIC BIBLIOGRAPHY:

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Baynes, J., Dominiczak, M. (2015). *Bioquímica médica*. Cuarta Edición. Editorial Elsevier. Madrid.

Berg, J.M., Stryer L., Tymoczko, J.L. (2007). Bioquímica. Editorial Reverté, S.A. Barcelona.

Herrera, E. Ramos, M.P., Roca, P., Viana, M. (2014). *Bioquímica Básica*. Primera Edición. Editorial Elsevier. Madrid.

Meisenberg, G., Simmons, W. (2018). *Principios de bioquímica médica*. Cuarta Edición. Editorial Elsevier. Madrid.

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