Information about the course

Degree: Bachelor of Sciences of Physical Activity and Sport

Faculty: Faculty of Physical Activity and Sport Sciences

Code: 281202 **Name:** Physiology of Exercise

Credits: 6,00 ECTS **Year:** 2 **Semester:** 1

Module: 1) Basic Training Module

Subject Matter: Biological and Mechanical Foundations of Human Motor Skills **Type:** Formación Básica

Branch of knowledge: Health Sciences

Department: Physical Preparation and Conditioning

Type of learning: Classroom-based learning

Language/-s in which it is given: Spanish

Teachers:

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Module organization

1) Basic Training Module

Subject Matter	ECTS	Subject	ECTS	Year/semester
Biological and Mechanical Foundations of Human Motor Skills	36	Biochemistry and Human Physiology	9	1/2
		Biomechanics of Physical Activity	6	2/1
		Human Anatomy	9	1/2
		Kinesiology	6	2/1
		Physiology of Exercise	6	2/1
Behavioral and social foundations of human motor skills.	24	History and Sociology of Physical Activity and Sport	6	1/2
		Sport Psychology	6	1/2
		Statitics and Data Processing	6	2/2
		Technology Applied to Physical Activity and Sport	6	1/1

Learning outcomes

Al finalizar la asignatura, el estudiante deberá demostrar haber adquirido los siguientes resultados de aprendizaje:

R10 - Explain, identify, and apply theoretical-practical knowledge about different anatomical-physiological systems that enable any physical activity.

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Develop theoretical-practical responses based on the sincere search for the full truth and the integration of all dimensions of the human being when faced with the great questions of life.

- Identify, communicate and apply scientific anatomical-physiological and biomechanical criteria at an advanced level of skills in the design, development and technical-scientific evaluation of appropriate procedures, strategies, actions, activities and guidelines; to prevent, minimize and/or avoid a health risk in the practice of physical activity and sport in all types of population.

- Know how to guide, design, apply and technically-scientifically evaluate physical exercise and physical condition at an advanced level, based on scientific evidence, in different areas, contexts and types of activities for the entire population and with emphasis on specific populations. special such as: older people (seniors), schoolchildren, people with disabilities and people with pathologies, health problems or assimilated (diagnosed and/or prescribed by a doctor), taking into account gender and diversity.

- Respect and put into practice the ethical principles and action proposals derived from the objectives for sustainable development, transferring them to all academic and professional activities.

Type of AR: Competencias

- Analyze, review and select the effect and effectiveness of the practice of research methods, techniques and resources and scientific work methodology, in solving problems that require the use of creative and innovative ideas.

- Promote education, dissemination, information and constant guidance to people and leaders on the benefits, significance, characteristics and positive effects of the regular practice of physical and sports activity and physical exercise, and the risks and harms of inadequate practice. and the elements and criteria that identify its adequate execution, as well as information, guidance and advice on the possibilities of appropriate physical activity and sport in its environment in any sector of professional intervention.

R11 - Critically analyze, compare, and synthesize various documentary information sources in English related to physiological processes and adaptations that occur during physical activity. Additionally, present the outcome of this process.

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Articulate and deploy procedures, processes, protocols, own analysis, with rigor and scientific attitude on matters of a social, legal, economic, scientific or ethical nature, when necessary and relevant in any professional sector of physical activity and sport (formal education and informal physical-sports; physical and sports training; physical exercise for health; direction of physical activity and sport).

- Develop theoretical-practical responses based on the sincere search for the full truth and the integration of all dimensions of the human being when faced with the great questions of life.

- Identify, communicate and apply scientific anatomical-physiological and biomechanical criteria at an advanced level of skills in the design, development and technical-scientific evaluation of appropriate procedures, strategies, actions, activities and guidelines; to prevent, minimize and/or avoid a health risk in the practice of physical activity and sport in all types of population.

- Respect and put into practice the ethical principles and action proposals derived from the objectives for sustainable development, transferring them to all academic and professional activities.

Type of AR: Competencias

- Analyze, review and select the effect and effectiveness of the practice of research methods , techniques and resources and scientific work methodology, in solving problems that require the use of creative and innovative ideas.

- Promote education, dissemination, information and constant guidance to people and leaders on the benefits, significance, characteristics and positive effects of the regular practice of physical and sports activity and physical exercise, and the risks and harms of inadequate practice. and the elements and criteria that identify its adequate execution, as well as information, guidance and advice on the possibilities of appropriate physical activity and sport in its environment in any sector of professional intervention.

R12 - Resolve exercises or practical cases related to physiological responses during rest and/or physical exercise by experimenting and measuring responses across different variables.

Learning outcomes of the specified title

Type of AR: Habilidades o Destrezas

- Apply the principles derived from the concept of integral ecology in your proposals or actions, whatever the scope and area of knowledge and the contexts in which they are proposed.

- Articulate and deploy procedures, processes, protocols, own analysis, with rigor and scientific attitude on matters of a social, legal, economic, scientific or ethical nature, when necessary and relevant in any professional sector of physical activity and sport (formal education and informal physical-sports; physical and sports training; physical exercise for health; direction of physical activity and sport).

- Develop theoretical-practical responses based on the sincere search for the full truth and the integration of all dimensions of the human being when faced with the great questions of life.

- Identify, communicate and apply scientific anatomical-physiological and biomechanical criteria at an advanced level of skills in the design, development and technical-scientific evaluation of appropriate procedures, strategies, actions, activities and guidelines; to prevent, minimize and/or avoid a health risk in the practice of physical activity and sport in all types of population.

- Know how to guide, design, apply and technically-scientifically evaluate physical exercise and physical condition at an advanced level, based on scientific evidence, in different areas, contexts and types of activities for the entire population and with emphasis on specific populations. special such as: older people (seniors), schoolchildren, people with disabilities and people with pathologies, health problems or assimilated (diagnosed and/or prescribed by a doctor), taking into account gender and diversity.

- Know, prepare and know how to apply the ethical-deontological, structural-organizational conditions, professional performance and the regulations of professional practice of Graduates in Physical Activity and Sports Sciences, in any professional sector of physical activity and sport (teaching formal and informal physical-sports; physical and sports training; physical exercise for health; as well as being able to develop multidisciplinary work

- Respect and put into practice the ethical principles and action proposals derived from the objectives for sustainable development, transferring them to all academic and professional activities.

- Understand, know how to explain and disseminate the functions, responsibilities and importance of a good professional Graduate in Physical Activity and Sports Sciences as well as analyze , understand, identify and reflect critically and autonomously on their identity, training and professional performance to achieve the purposes and benefits of physical activity and sport in an adequate, safe, healthy and efficient manner in all physical-sports services offered and provided and in any professional sector of physical activity and sport.

Type of AR: Competencias

- Analyze, review and select the effect and effectiveness of the practice of research methods , techniques and resources and scientific work methodology, in solving problems that require the use of creative and innovative ideas.

- Promote education, dissemination, information and constant guidance to people and leaders on the benefits, significance, characteristics and positive effects of the regular practice of physical and sports activity and physical exercise, and the risks and harms of inadequate practice. and the elements and criteria that identify its adequate execution, as well as information, guidance and advice on the possibilities of appropriate physical activity and sport in its environment in any sector of professional intervention.

Assessment system

Modalidad presencial

Assessed learning outcomes	Granted percentage	Assessment tool
R10, R12	60,00%	Written and/or practical tests.
R10, R11	20,00%	Individual or Group Work / Project.
R10, R11, R12	20,00%	Diary, Portfolio or Notebook.

Observations

This course is NOT eligible for a single assessment request in accordance with Article 10.3 of the GENERAL REGULATIONS FOR THE ASSESSMENT AND GRADING OF OFFICIAL COURSES AND UCV DEGREE PROGRAMS.
Students may retain the assessment instruments they have passed for three years after their initial enrollment.
It is necessary to obtain a 50% in the following evaluation instruments in order to pass the course:
·Written and/or practical tests
·Individual or Group Work / Project
Attendance at all practical sessions indicated in the schedule is compulsory. If students fail to attend 80% of these sessions, they will fail both exam sessions for the course and will have to retake all practical sessions in the following enrollment period.
The project requires attendance at two thirds of the group work sessions in the classroom, as part of the correct development of the group work. In these sessions each group and student must complete the proposed tasks in due time and form.

SPECIFICATIONS TO THE EVALUATION INSTRUMENTS

Written and/or practical tests

Test type test:

·40% of the grade of the course

·Theoretical questions, short

·25-40 questions

·3 answer options

·Penalty: 1 wrong answer subtracts 50%.

·There will be 1 partial exam + the final exam with cumulative evaluation type.

Written development test:

·20% of the grade of the subject. Answer to two out of three possible questions.

·Questions of practical/applied type, to develop in writing.

·It does not penalize.

Journal, Portfolio or Notebook

Assessment of the practical context applied, with delivery of practices or classroom exercises by platform as a portfolio. It is necessary to obtain a 5 out of 10 to make average. The portfolio on the platform will be composed of:

Practical laboratory sessions

·10% of the grade of the course

·It consists of participating and adequately answering the questions that will be asked in the practical laboratory sessions

Exercises/case studies

·10% of the grade of the course

··ndividual submission and defense of exercises and practical cases to be developed in writing, not mandatory.

·No penalty.

·Individual character

Individual or Group Work / Project

Group project, with different tasks and activities. Requirements:

·Obtain 5 points in the final exhibition.

·The project requires the attendance to two thirds of the group work sessions in the classroom, as part of the correct development of the group work. In these sessions each group must complete the proposed tasks.

The detailed explanation (procedure for the assignments) as well as the evaluation tools (worksheets or rubrics) for each section will be posted on each group's platform at the student's disposal.

Use of Artificial Intelligence Tools in the CAFD Degree Program

Use of Artificial Intelligence tools in the CAFD degree program In the Bachelor's Degree in Physical Activity and Sports Sciences (CAFD), the use of Artificial Intelligence (AI) tools is permitted in a complementary and responsible manner, as long as it contributes to active learning, the development of critical thinking, and the improvement of students' professional skills. Under no circumstances should AI replace personal effort, direct practice, or independent reflection, which are fundamental pillars of this degree program.

Permitted Uses of AI:

·Obtaining alternative explanations of theoretical or methodological concepts.

·Generating outlines, concept maps, or summaries to support study.

·Simulating interviews, questionnaires, or training sessions as part of methodological or research practices.

·Receiving feedback on report writing, provided that the original content is the student's own.

·Supporting the search for bibliography or scientific references, always contrasting with reliable and real academic sources, and respecting the CAFD regulations for the presentation of university work.

Prohibited Uses of AI:

·Writing complete sections of academic papers, classroom exercises and practices, internship reports, journals, or portfolios, as well as the Final Degree Project.

·Formulating hypotheses, objectives, or conclusions for academic work.

·Replacing qualitative or quantitative data analysis with automated tools without human validation.

·Creating videos, presentations, or avatars with AI as a substitute for the student's oral or practical presentation.

·Obtaining automatic answers to tests, rubrics, or assessable activities through the use of AI.

Citation and Attribution Guidelines:

·Any use of AI tools must be explicitly acknowledged in the submitted document (e.g., in a footnote or appendix).

·The name of the tool, the purpose of use (e.g., grammatical review, organization of ideas, interview simulation), and where it was used in the work must be indicated.

·Responsible use of AI will be evaluated within the framework of originality, academic honesty, and digital competence.

Additional recommendations:

Students are encouraged to combine the use of AI with traditional methods (manual problem solving, practical session design, direct observation, etc.) to ensure the comprehensive development of their skills.

If there are any doubts about the permitted use of AI in a specific activity, students should consult the faculty responsible for the course.

Actividades formativas

The methodologies to be used so that the students reach the expected learning outcomes will be the following:

M2 Resolution of problems and cases.

M3 Discussion in small groups.

M4 Practical laboratories.

M5 Presentation of content by the teacher.

M6 Practical lesson.

M7 Group dynamics and activities.

IN-CLASS TRAINING ACTIVITIES

ACTVITY	RELATIONSHIP WITH THE COURSE LEARNING OUTCOMES	METHODOLOGY	HOURS	ECTS
THEORETICAL CLASS: Presentation of contents by the teacher. Competency analysis. Demonstration of capabilities, skills and knowledge in the classroom.	R10, R11, R12	Presentation of content by the teacher.	28,00	1,12

PRACTICAL CLASS / SEMINAR: Group dynamics and activities. Resolution of problems and cases. Practical laboratories. Data search, computer classroom, library, etc. Meaningful construction of knowledge through student interaction and activity.	R10, R11, R12	Discussion in small groups. Practical laboratories. Practical lesson. Group dynamics and activities.	24,00	0,96
EVALUATION: Set of oral and/or written tests used in the evaluation of the student, including the oral presentation of the final degree project.	R10, R11, R12	Resolution of problems and cases.	4,00	0,16
TUTORING: Supervision of learning, evolution. Discussion in small groups. Resolution of problems and cases. Presentation of results before the teacher. Presentation of diagrams and indexes of the proposed works.	R10, R11, R12	Presentation of content by the teacher.	4,00	0,16
TOTAL			**60,00**	**2,40**

TRAINING ACTIVITIES OF AUTONOMOUS WORK

ACTVITY	RELATIONSHIP WITH THE COURSE LEARNING OUTCOMES	METHODOLOGY	HOURS	ECTS
GROUP WORK: Problem solving. Preparation of exercises, memoirs, to present or deliver in classes and/or in tutoring.	R10, R11, R12	Discussion in small groups. Group dynamics and activities.	37,50	1,50
SELF-EMPLOYED WORK: Study, Individual preparation of exercises, assignments, reports, to present or deliver in classes and/or in tutoring. Activities in platform or other virtual spaces.	R10, R11, R12	Resolution of problems and cases.	52,50	2,10
TOTAL			**90,00**	**3,60**

Description of contents

Descripción de contenidos necesarios para la adquisición de los resultados de aprendizaje.

Theoretical content:

Block of content	Contents
1. Skeletal muscle: Responses and adaptations to physical exercise.	Skeletal muscle: Responses and adaptations to physical exercise.
2. Energy metabolism: Responses and adaptations to physical exercise.	Energy metabolism: Responses and adaptations to physical exercise.
3. Responses and adaptations of the cardiovascular system to physical exercise.	Responses and adaptations of the cardiovascular system to physical exercise.
4. Responses and adaptations of the respiratory system to physical exercise.	Responses and adaptations of the respiratory system to physical exercise.
5. Responses and adaptations of the endocrine system to exercise.	Responses and adaptations of the endocrine system to exercise.
6. Aerobic-anaerobic transition. Concept and assessment of anaerobic threshold.	Aerobic-anaerobic transition. Concept and assessment of anaerobic threshold.
7. Physiological aspects in different populations: sportswomen, childhood, adolescence and the elderly.	Physiological aspects in different populations: sportswomen, childhood, adolescence and the elderly.

Temporary organization of learning:

Block of content	Sessions	Hours
1. Skeletal muscle: Responses and adaptations to physical exercise.	5	10,00
2. Energy metabolism: Responses and adaptations to physical exercise.	6	12,00
3. Responses and adaptations of the cardiovascular system to physical exercise.	4	8,00
4. Responses and adaptations of the respiratory system to physical exercise.	4	8,00
5. Responses and adaptations of the endocrine system to exercise.	2	4,00
6. Aerobic-anaerobic transition. Concept and assessment of anaerobic threshold.	5	10,00
7. Physiological aspects in different populations: sportswomen, childhood, adolescence and the elderly.	4	8,00

References

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SCIENTIFIC JOURNALS:

Medicine and Science in Sports and Exercise
International Journal of Sport Nutrition and Exercise Metabolism
Exercise and Sport Sciences Reviews
Journal of Sport & Exercise Psychology
Journal of Applied Physiology
European Journal of Applied Physiology