Universidad Zaragoza

Academic Year/course: 2023/24

26304 - Anatomic, kinesiological and biomechanical basics in physical activity and sport

Syllabus Information

Academic year: 2023/24
Subject: 26304 - Anatomic, kinesiological and biomechanical basics in physical activity and sport
Faculty / School: 229 - Facultad de Ciencias de la Salud y del Deporte
Degree: 295 - Degree in Physical Activity and Sports Science
ECTS: 12.0
Year: 1
Semester: Annual
Subject type: Basic Education
Module:

1. General information

The main objectives of the subject are focused on knowing the different anatomical structures involved in the movement of the human body, as well as knowing the basic mechanical fundamentals and their application in the analysis of the movement. We will also work on other aspects such as teamwork, critical reasoning and the preparation of a public intervention on a topic to be developed.

The approaches and objectives of the subject are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of the UN: SDG 3 (Health and well-being), SDG 4 (Quality education), SDG 5 (Gender equality) and SDG 17 (Partnerships to achieve the goals).

2. Learning results

- Express in writing in a clear way the theoretical foundations of the subjects of anatomy, kinesiology and biomechanics, as well as basic analysis of simple movements and certain sports techniques.
- Recognize anatomical apparatus and systems in models and virtual methods. Perform a physical examination of the locomotor system. Know and handle specific apparatus used in the analysis of movement and sports techniques
- Carry out a written practical work of an analysis of a simple sports technique, applying what has been learned in practice on the use of specific equipment and interpretation of the results obtained. The paper will consist of introduction, material and methods, results in which a small descriptive statistic is applied, discussion with bibliographic review of three related articles and conclusions. Present the above work orally with clarity and subsequent defence.
- Present in seminars in front of the rest of the students the material learned in the theoretical classes with the purpose of facing the fact of speaking in public.

3. Syllabus

First four-month period: Human anatomy

1. Introduction to general human anatomy
2. Cardiovascular system and lymphatic system
2. Respiratory system
3. Digestive system
4. Excretory apparatus
5. Reproductive system
7. Endocrine system
8. Nervous system and sense organs
9. General aspects of the locomotor system
10. Head and neck: skeleton, joints and muscles
11. Trunk: skeleton, joints and muscles
12. Upper extremity: skeleton, joints and muscles
13. Lower extremity: skeleton, joints and muscles

Second four-month period: Kinesiology and Biomechanics

Block I. Fundamentals

- Topic 1 - Introduction to Kinesiology and Biomechanics
- Topic 2 - Linear kinematics
- Topic 3 - Angular kinematics
- Topic 4 - Linear kinetics
- Topic 5 - Angular kinetics
- Topic 6 - Equilibrium and stability
- Topic 7 - Work, power and energy

Block II. Physical characteristics of fabrics

- Topic 8 - Physical characteristics of fabrics and materials

Block III. Motion recording and analysis

- Topic 9 - Gait analysis
- Topic 10 - Career analysis
- Topic 11 - Tools for biomechanical analysis
- Topic 12 - Interpretation, preparation and analysis of data

Block IV. Biomechanics and kinesiology of the joints of the body

- Topic 13 - Joint complex of the shoulder and elbow
- Topic 14 - Joint complex of the trunk, hand and wrist
- Topic 15 - Hip, knee, ankle and foot joint complexes

4. Academic activities

Due to the high theoretical load of this subject, it is necessary a continuous work and constant effort by students. Attendance and active participation in classes, information research, teamwork, and tutoring requests are encouraged.

The subject has a load of 12 ECTS, corresponding to 300 hours distributed as follows:

- Study: 120 hours
- Teaching assignments and other activities (individual and group): 51 hours
- Theoretical classes (in which discussion will be encouraged): 45 hours
- Problems and cases: 45 hours
- Laboratory (models and anatomical pieces, data collection, use of specific material...): 30 hours
- Assessment tests. 9 hours

5. Assessment system

The grade for the subject is divided into: Human Anatomy (50%) and Biomechanics and Kinesiology (50%). To pass the subject it is necessary to pass both blocks separately.

Fraud or total or partial plagiarism in any of the evaluation tests will result in the failure of the subject with the minimum grade, in addition to the disciplinary sanctions that the guarantee committee adopts for these cases. For a more detailed knowledge about plagiarism and its consequences is requested https://biblioteca.unizar.es/propiedad-intelectual/propiedad-intelectual-plagio#Que see the following link:

First four-month period: Human anatomy (50%)

The grade, both for continuous and global evaluation, will be distributed as follows:

- Theoretical part (60%): a test part (which will take into account the chance factor), and a development part
- Practical part (40%): a part of identification of structures and a part of application of the acquired knowledge and practical skills acquired in the subject

In order for the teacher to give continuous evaluation (e.g., through feedback) it is necessary to participate in the classes and perform the tasks that will be specified at the beginning of the term

Since this is an annual subject, there will be a midterm exam, specifying the date at the beginning of the term.

To pass the Anatomy Block it is necessary to pass the theoretical and practical parts separately (with a 5 out of 10).

Second four-month period: Biomechanics and Kinesiology (50%)

1. Continuous assessment

- Theoretical exam of multiple choice and short questions (40%): There will be two midterm exams throughout the term.

- Group practical work (30%): A group work will be carried out analysing a motor gesture from a kinematic and kinetic perspective.
- Active participation in class (10%): Questions will be asked in class and there will be complementary activities to evaluate the participation and assimilation of knowledge of the students.
- Portfolio: (20%): During the practices and seminars, worksheets provided by the teacher will be completed

To be able to follow the continuous evaluation of the Biomechanics Block students must comply with the following requirements:

Obtain a grade higher than 4 in each of the midterm exams and an average of more than 5 between the two. Obtain a grade higher than 5 in both the group practical work and the portfolio. Attendance to practical classes: a maximum of 2 practical classes may be missed . Students who miss 3 or more practices will have to follow the global evaluation, even if they meet the requirements requested in the previous points.

2. Global assessment.

- Theoretical exam of multiple choice and short questions (50%): On official examination date.
- Practical exam (20%): the practical exam will be held on the official exam date. Those students who have followed the continuous evaluation but have failed the mid-term exams may submit the portfolio on the same date.
- Practical work on a motor gesture (30%) from a kinematic and kinetic perspective.

Students following the global assessment will have to obtain a minimum of 5 out of 10 in each of the sections described above

Regardless of the option selected (continuous or global), students who have passed may obtain up to 1 extra point from the completion of an activity. The activity to be carried out, and its corresponding grade, must be agreed with the faculty responsible for the subject, prior to the realization of the same.