Universidad Zaragoza

Academic Year/course: 2023/24

30802 - General physics and fundamentals of physical analysis

Syllabus Information

Academic year: 2023/24
Subject: 30802 - General physics and fundamentals of physical analysis
Faculty / School: 105 - Facultad de Veterinaria
Degree: 568 - Degree in Food Science and Technology
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Basic Education
Module:

1. General information

The main objective of the subject is that, from a basic knowledge of fundamental principles of physics, the student understands the basic physical models and physical techniques used in food analysis. Also, using case studies, the student will learn to treat data and interpret results with a critical sense, as well as to present their work reports, in which this critical sense is appreciated, both in the content and in the container of the same.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement:

-Goal 4: Quality education.

-Objective 7: Affordable and Clean Energy

-Goal 9: Industry, innovation and infrastructure.

-Goal 12. Responsible Production and Consumption

-Goal 13. Climate action.

2. Learning results

The student, in order to pass this subject, must demonstrate that:

- Is able to identify the fundamental magnitudes of physics involved in the problems to be solved Is able to understand the different basic physical models applicable to food texture studies Is able to understand the different basic physical models applicable to food rheology studies Is able to solve problems related to the basic knowledge of Mechanics, Thermodynamics and Optics, necessary for further studies.
- Is able to understand the electrical characteristics of materials applicable to food and their electromagnetic analysis techniques.
- Is able to report on their laboratory work, present and defend them both privately and publicly.
- Is able to perform literature searches on the web related to the physical characteristics of foods and understand the experimental part of these works, both in Spanish and English

3. Syllabus

TOPIC 1: Mechanics

TOPIC 2: Elasticity

TOPIC 3: Fluids

TOPIC 4: Surface properties

TOPIC 5: Thermodynamics

TOPIC 6: Electricity

TOPIC 7: Optics

4. Academic activities

Master classes: 36 hours

Theoretical-practical sessions in which the contents of the subject will be explained.

Problems and cases: 10 hours

Practical physics problems will be solved

Laboratory practices: 14 hours

Physics laboratory equipment will be used to perform various practices related to the theoretical content

Personal study: 87 hours

Assessment tests. 3 hours

5. Assessment system

The subject will be evaluated in the **global evaluation** modality by means of the following activities:

Laboratory practices (30% of the grade, minimum 4 out of 10)

There will be several laboratory practices distributed throughout the semester. A report must be submitted at the end of each practice. In addition, the following aspects will be evaluated during its realization by means of a continuous observation of the student's work and the correction of the documents generated in each practice:

- Previous preparation of the practice.
- Handling of laboratory material.
- Deepening in practice.
- Student autonomy and participation.
- Report made at the end of each practice.

The grade for this activity will be the average of the grade obtained in each of the practice.

Written test (70% of the grade, minimum 4 out of 10)

The evaluation of theoretical knowledge and problem-solving skills will be carried out by means of a written test on the dates set by the Center. The test will consist of 6 open questions and will be evaluated on 10 total points.

In order to pass the subject, the student must achieve at least 40% of the grade in each of the two evaluation activities mentioned above. The final grade, sum of the 2 activities, must be 5 points, or higher.

If the student has not passed the evaluation activity related to the laboratory practices during the semester, they will have the opportunity to pass this activity by means of a global written test in the two official calls consisting of a questionnaire with 10 questions related to the practices. The duration of the test will be one hour.