

26916 - Classical Mechanics II

Syllabus Information

Academic year: 2024/25

Subject: 26916 - Classical Mechanics II

Faculty / School: 100 - Facultad de Ciencias

Degree: 447 - Degree in Physics

ECTS: 7.0

Year: 2

Semester: Second semester

Subject type: Compulsory

Module:

1. General information

This subject is part of the Classical Physics module of the Physics degree and, together with Classical Mechanics I, presents contents related to Mechanics, which is one of the basic fields of Physics.

Its objective is to provide the student with knowledge of many-particle and rigid solid mechanics, waves, and relativistic mechanics, as well as their methods and applications that will allow them to continue learning autonomously in this field.

It is recommended to have taken the subjects Fundamentals of Physics I and II, Physics Laboratory, Mathematical Analysis, Differential Calculus, Classical Mechanics I and Computer Science.

2. Learning results

The student, in order to pass this subject, must demonstrate the following results...

1. Calculate the inertia tensor of a rigid solid.
2. Properly describe mechanical systems with ligatures.
3. Identify the normal modes of a coupled oscillator system.
4. Obtain the wave equation for different physical systems.
5. Relate observations of two inertial reference systems according to special relativity.

3. Syllabus

The program offered to the student to help them achieve the expected results comprises the following activities

THEORY CLASSES

The program of the subject is organized by blocks as follows:

1. Particle systems.
2. Solid Rigid. Movement in the plane.
3. Solid Rigid. Free motion, Euler equations and Lagrangian mechanics.
4. Small oscillations and normal oscillation modes.
5. Mechanical waves.
6. Relativistic mechanics.

LABORATORY SESSIONS

1. Rigid solid.
2. Standing waves.

4. Academic activities

The distribution, according to credits, of the different programmed activities is as follows:

- Theoretical and practical classes: 5 theoretical credits and 1.5 credits of problem solving. The days, times and classroom will be assigned by the Faculty of Science.
- Laboratory practices: 0.5 credits. The dates will be fixed according to the number of students enrolled and the availability of the laboratories.

- Examinations: The written exam will have a duration of 3 hours. It will take place on the date indicated by the Faculty of

Science. For the practical laboratory exam, students who must take the exam will be summoned with due notice .

5. Assessment system

Evaluation activities:

1. Laboratory practices (20%): This subject is mandatory and its average grade must reach a passing level (5 points). It will account for 20% of the overall grade. Otherwise, students must take a global test.
2. Examination test (70%): It is held on the dates set for the single global test. It will be necessary to obtain a minimum grade of 4 points (out of 10) in the exam in order to be able to average with the rest of the sections.
3. Continuous evaluation (10%): Problem solving and completion of a practical work. This activity is completely optional. If a student does not want to access the continuous evaluation, or their exam grade is lower than 4, in the global computation of the subject the exam will be worth 80% instead of 70%.

The final grade must be greater than or equal to 5 to pass the subject.

Global test:

Students will take an exam with the same structure described above, which will account for 80% of the overall grade . Students who pass this exam will go on to take the practical exam, which will account for 20% of the final grade and will require a minimum grade of 5.

6. Sustainable Development Goals

4 - Quality Education