26916 - Classical Mechanics II

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	447 - Degree in Physics
ECTS	7.0
Course	2
Period	Second semester
Subject Type	Compulsory
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The teaching-learning methodologies that arise to achieve the objectives and acquire the skills are as follows:
* Lectures: Development and progressive discussion of the program content in the classroom, based on the material prepared by the teacher and the bibliography provided.
* Problem solving: solving practical cases in the classroom, with active participation of students. Students are provided with a collection of exercises, some of which are solved in the classroom.
* Laboratory sessions: Students perform in groups of two, two laboratory activities, which will focus on the program content. Students will have an explanatory script. The teacher will supervise the implementation of the experiments, data collection and analysis. Students will develop in hours of study a written report on the work done.
* Tutorials: The resolution of doubts and explanation of concepts will take place in the teacher's office at a specified time.

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5.2.Learning activities

THEORY CLASSES
The program of the course is organized in blocks as follows:
1. Particle systems.
2. Rigid Body.
3. Small oscillations and normal modes.
4. Mechanical Waves.
5. Relativistic mechanics.

PROBLEM SOLVING
The students will solve problems related to the topics explained in the theory classes.

LABORATORY SESSIONS
1. Waves in water. Reflection and refraction. Diffraction and Interference.
2. Standing waves in tubes: Sound waves. Standing waves in two dimensions: Chladni plates.

5.3.Program

The program of the course is organized in blocks as follows:
1. Particle systems.
2. Rigid Body. Tensor of inertia, Euler equations and Lagrangian mechanics.
3. Small oscillations and normal modes.
4. Mechanical waves. Wave equation. Transverse and longitudinal mechanical waves.
5. Relativistic mechanics.

5.4.Planning and scheduling

The distribution, depending on the credits of the various activities scheduled, is as follows:
* Theoretical and practical classes: 5 theoretical credits and 1.5 credits of problem solving. The days, hours and classroom will be assigned by the Faculty of Science.
* Laboratory: 0.5 credits. The dates will be set at the beginning of the semester according to the number of students enrolled and the availability of laboratories.
* Exams: The written exam will last 3 hours. It will be held on the date indicated by the Faculty of Sciences. For practical laboratory test, it will be convened in due time with the students who must do it.

5.5.Bibliography and recomended resources

T.W.B. Kibble, "Clasical Mechanichs"(Urmo S. A.)

A. Rañada, "Dinámica Clásica"(Alianza)

I. G. Main, "Vibration and Waves in Physics"(Cambridge University Press)

A. P. French, "Relatividad especial" (Reverté)

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