



UNIVERSIDAD DE CASTILLA - LA MANCHA
GUÍA DOCENTE

1. General information

Course: PHYSICS I
 Type: BASIC
 Degree: 411 - UNDERGRADUATE DEGREE PROGRAMME IN AGRICULTURAL AND FOOD ENGINEERING
 Center: 107 - E.T.S. OF AGRICULTURAL ENGINEERS OF C. REAL
 Year: 1
 Main language: Spanish
 Use of additional languages:
 Web site:

Code: 60363
 ECTS credits: 6
 Academic year: 2023-24
 Group(s): 20
 Duration: First semester
 Second language: English
 English Friendly: Y
 Bilingual: N

| Lecturer: ANGEL MARIA MARTINEZ GARCIA-HOZ - Group(s): 20 | | | | |
|--|-----------------|--------------|-----------------------------|--|
| Building/Office | Department | Phone number | Email | Office hours |
| ETSI Agrónomos / 0.1 | FÍSICA APLICADA | 926051999 | angelmaria.martinez@uclm.es | Monday 9:30-11:30 a.m. Friday 10:30 a.m.- 2:30 p.m. or by appointment by email |

2. Pre-Requisites

NO PREREQUISITES HAVE BEEN ESTABLISHED, ALTHOUGH IT IS RECOMMENDED TO DOMINATE THE FOLLOWING MATHEMATICAL TOOLS:

- I. Algebra and calculus at the 2nd Baccalaureate level (systems of equations, trigonometry, vector, differential and integral calculus, ...).
- II. Dimensional analysis. Kinematics in one dimension.

3. Justification in the curriculum, relation to other subjects and to the profession

The subject "Physics I" has a fundamental influence on the following subjects of subsequent courses:

Construction, Engines, Hydraulics, Calculation of Structures and Electrification, Agricultural and Agro-industrial Constructions, Irrigation Technology, Agricultural Machinery, Topography and Environmental Science and Technology.

4. Degree competences achieved in this course

| Course competences | |
|--------------------|---|
| Code | Description |
| E06 | Understanding and mastery of the basic concepts of the general laws of mechanics, thermodynamics, fields and waves, and electromagnetism and their application to solve engineering problems |
| G03 | Speaking and writing skills |
| G04 | Analysis and synthesis capacity |
| G05 | Organization and planning capacity |
| G06 | Ability to manage information |
| G07 | Problem resolution |
| G08 | Decision-making |
| G10 | Teamwork |
| G11 | Interpersonal relationship skills |
| G13 | Teamwork |
| G14 | Autonomous Learning |
| G15 | Adaptation to new situations |
| G16 | Creativity |
| G18 | Initiative and enterprising spirit |
| G19 | Quality Motivation |
| G20 | Environmental sensitivity |
| G21 | Ability to apply practical knowledge |
| G25 | Adequate knowledge of physical problems, technologies, machinery and water and energy supply systems, the limits imposed by budgetary factors and construction regulations, and the relationships between facilities or buildings and farms, agri-food industries and spaces related to the gardening and landscaping with their social and environmental environment, as well as the need to relate them with human needs and the preservation of the environment. |
| G30 | Knowledge in basic, scientific and technological subjects that allow continuous learning, as well as an ability to adapt to new situations or changing environments |
| G31 | Ability to solve problems with creativity, initiative, methodology and critical thinking |

5. Objectives or Learning Outcomes

Course learning outcomes
 Description
 Acquire skills in solving and calculating numerical problems.
 Familiarize yourself with the scientific and technical language of Physics, particularly in relation to the future performance of the profession for which this degree qualifies.
 Understand the scientific method in its inductive and deductive ways through the principles of Physics.
 Acquisition of skills in the use of the usual methods of experimental work in the Physics laboratory.
 Know and understand the fundamentals of Physics.
 Development of creativity through open statement exercises.

6. Units / Contents

- Unit 1: Mechanics**
 Unit 1.1 Kinematics
 Unit 1.2 Particle dynamics
 Unit 1.3 Dynamics of particle systems
 Unit 1.4 Statics and dynamics of the rigid body
 Unit 1.5 Fluid mechanics
- Unit 2: Thermodynamics**
 Unit 2.1 Heat and temperature
 Unit 2.2 First and second law of thermodynamics

7. Activities, Units/Modules and Methodology

| Training Activity | Methodology | Related Competences (only degrees before RD 822/2021) | ECTS | Hours | As | Com | Description |
|--|----------------------------------|---|------|-------|----|-----|-------------|
| Class Attendance (theory) [ON-SITE] | Lectures | E06 G03 G04 G05 G06 G08 G30 | 0.92 | 23 | Y | N | |
| Workshops or seminars [ON-SITE] | Problem solving and exercises | E06 G07 G08 G10 G11 G13 G21 G25 G30 G31 | 0.88 | 22 | Y | N | |
| Class Attendance (practical) [ON-SITE] | Practical or hands-on activities | E06 G07 G08 G10 G11 G13 G20 G21 G25 G30 G31 | 0.4 | 10 | Y | Y | |
| Group tutoring sessions [ON-SITE] | Group tutoring sessions | E06 G04 G05 G06 G07 G08 G10 G11 G13 G14 G15 G16 G18 G21 | 0.1 | 2.5 | Y | N | |
| Study and Exam Preparation [OFF-SITE] | Self-study | E06 G03 G05 G06 G07 G08 G13 G14 G15 G16 G18 G19 G21 | 3.6 | 90 | N | - | |
| Mid-term test [ON-SITE] | Assessment tests | E06 | 0.1 | 2.5 | Y | Y | |

| | | | |
|--|---|-----|---|
| Total: | 6 | 150 | Total class time hours: 60 |
| Total credits of in-class work: 2.4 | | | Total hours of out of class work: 90 |
| Total credits of out of class work: 3.6 | | | |

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

| Evaluation System | Continuous assessment | Non-continuous evaluation* | Description |
|------------------------------------|-----------------------|----------------------------|---|
| Mid-term tests | 70.00% | 0.00% | Two partial exams: one in the middle of the semester that releases matter for the ordinary call if your grade is equal to or greater than 4, and another within the final exam. |
| Laboratory sessions | 15.00% | 0.00% | Carrying out laboratory practices: Attendance at the laboratory, carrying out the practices and preparing a report is an essential requirement to pass the subject. If a grade lower than 4.0 is obtained, in an extraordinary call the student must take an additional exam on laboratory practices. |
| Assessment of active participation | 15.00% | 0.00% | Evaluation activities such as questionnaires, problems,... developed or proposed in the classroom |
| Final test | 0.00% | 100.00% | Final exam for non-continuous assessment |
| Total: | 100.00% | 100.00% | |

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The final exam will consist of two differentiated partial exams, those students with a grade equal to or greater than 4 in the first partial exam may only take the second partial exam. If the final exam mark or the average of the partial exams, and the laboratory mark are both equal to or greater than 4, the course grade will be determined based on the percentages in the previous table (70% exam + 15% laboratory + 15% participation), otherwise the mark that will appear in the minutes will be that of the exam or 4 in the event that the mark of the exam is greater than 4.

Non-continuous evaluation:

In this modality, the evaluation will be carried out based on the final exam scheduled by the School, which will include a laboratory part for those students who have not passed the practicals in the last two years.

Specifications for the resit/retake exam:

There will be a global exam of all the subject. Those students with a grade of less than 4 in the laboratory must take an additional test on the contents and procedures worked on in the laboratory, which must be passed with a grade equal to or greater than 4, in order to pass the subject. The grade for the course will be 85% of the overall exam grade plus 15% of the laboratory grade.

Specifications for the second resit / retake exam:

The evaluation will be carried out exclusively with the exam programmed by the School for this purpose, which will have a laboratory part for those students who have not passed the practices.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

| Hours | hours |
|---|-----------------------------|
| Unit 1 (de 2): Mechanics | |
| Activities | Hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 19 |
| Workshops or seminars [PRESENCIAL][Problem solving and exercises] | 18 |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities] | 6 |
| Group tutoring sessions [PRESENCIAL][Group tutoring sessions] | 2 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 80 |
| Mid-term test [PRESENCIAL][Assessment tests] | 2 |
| Group 20: | |
| Initial date: 18-09-2023 | End date: 21-11-2023 |
| Group 21: | |
| Initial date: 18-09-2023 | End date: 21-11-2023 |
| Unit 2 (de 2): Thermodynamics | |
| Activities | Hours |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 4 |
| Workshops or seminars [PRESENCIAL][Problem solving and exercises] | 4 |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities] | 4 |
| Group tutoring sessions [PRESENCIAL][Group tutoring sessions] | 5 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 10 |
| Mid-term test [PRESENCIAL][Assessment tests] | 5 |
| Group 20: | |
| Initial date: 22-11-2023 | End date: 22-12-2023 |
| Group 21: | |
| Initial date: 22-11-2023 | End date: 22-12-2023 |
| Global activity | |
| Activities | hours |
| Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities] | 10 |
| Group tutoring sessions [PRESENCIAL][Group tutoring sessions] | 2.5 |
| Workshops or seminars [PRESENCIAL][Problem solving and exercises] | 22 |
| Mid-term test [PRESENCIAL][Assessment tests] | 2.5 |
| Class Attendance (theory) [PRESENCIAL][Lectures] | 23 |
| Study and Exam Preparation [AUTÓNOMA][Self-study] | 90 |
| Total horas: 150 | |

10. Bibliography and Sources

| Author(s) | Title/Link | Publishing house | City | ISBN | Year | Description |
|------------------------|--|-------------------------------|------|-----------------------|------|-----------------------------|
| Eisberg, Robert Martin | Física : Fundamentos y aplicaciones | McGraw-Hill | | 968-451-634-7 (v.2) | 1990 | |
| Gettys, W. Edward | Física para ingeniería y ciencias | McGraw-Hill | | 970-10-4889-X (v. II) | 2005 | |
| Lea, Susan M. | Física : la naturaleza de las cosas | Paraninfo,Thomson Learning | | 84-283-2814-5 (T.II) | 2001 | |
| Serway, Raymond A. | Física para ciencias e ingenierías | International Thomson | | 970-686-423-7(v.1) | 2005 | |
| Tipler, Paul Allen | Física para la ciencia y la tecnología | Reverte | | 84-291-4400-5 (o.c.) | 2005 | |
| Tipler, Paul Allen | Physics for scientists and engineers | W. H. Freeman | | 978-1-4292-0132-2 (v | 2008 | |
| Ángel Franco | Física con ordenador | | | | | Curso interactivo de Física |
| Alonso, Marcelo | Física | Addison-Wesley Iberoamericana | | 84-7829-027-3 | 1999 | |
| Young, Hugh D. | Física universitaria : Sears-Zemansky. | Addison-Wesley, | | 978-607-442-304-4 (| 2009 | |