



## 1. General information

Course: PRINCIPLES OF PHYSICS II

Type: BASIC

Degree: 315 - UNDERGRADUATE DEGREE IN BUILDING ENGINEERING

Center: 308 - SCHOOL POLYTECHNIC OF CUENCA

Year: 1

Main language: Spanish

Use of additional languages:

Web site:

Code: 59303

ECTS credits: 6

Academic year: 2021-22

Group(s): 30

Duration: C2

Second language:

English Friendly: Y

Bilingual: N

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## 2. Pre-Requisites

Prerequisites not required, although it is advisable to have successfully completed the subjects of the first semester included in the syllabus, especially those related to physics and mathematics.

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

The physical foundations of the Building Engineering are divided into two subjects within the block of basic subjects of the degree. In the construction of a building not only the structural and constructive part must be contemplated

## 4. Degree competences achieved in this course

## Course competences

Code	Description
E05	Knowledge of the theoretical foundations and basic principles applied to building, fluid mechanics, hydraulics, electricity and electromagnetism, calorimetry and hygrometer, and acoustics.
G01	Ability for analysis and synthesis
G03	Ability to manage information
G04	Problem resolution
G06	Critical thinking
G07	Teamwork
G12	Autonomous learning
G21	Command of Information and Communication Technologies (ICT)

## 5. Objectives or Learning Outcomes

## Course learning outcomes

## Description

Use of computer tools for the numerical resolution of geometric and numerical problems.

Use of the appropriate approach for heat conduction.

Understanding of the basic principles of thermodynamics.

Correctly handle the electromagnetic magnitudes in three dimensions.

Understanding of the fundamental elements of electronics: capacity, self-induction, resistance and electromotive force, for its handling in DC and AC circuits

Understanding the fundamentals of acoustics in both its geometric and waving approach.

Understanding of the fundamental equations of fluid dynamics and statics.

## 6. Units / Contents

## Unit 1: Thermodynamics

- Unit 1.1
- Unit 1.2
- Unit 1.3
- Unit 1.4
- Unit 1.5
- Unit 1.6
- Unit 1.7
- Unit 1.8

## Unit 2: Optics and Acoustics

- Unit 2.1
- Unit 2.2
- Unit 2.3
- Unit 2.4

## Unit 3: Hydrostatics and Hydrodynamics

- Unit 3.1
- Unit 3.2
- Unit 3.3
- Unit 3.4
- Unit 3.5
- Unit 3.6
- Unit 3.7
- Unit 3.8
- Unit 3.9

## Unit 4: Electrostatics

- Unit 4.1
- Unit 4.2
- Unit 4.3
- Unit 4.4
- Unit 4.5
- Unit 4.6
- Unit 4.7
- Unit 4.8
- Unit 4.9
- Unit 4.10

## Unit 5: Magnetostatics and Magnetic Induction

- Unit 5.1
- Unit 5.2
- Unit 5.3
- Unit 5.4
- Unit 5.5
- Unit 5.6
- Unit 5.7
- Unit 5.8
- Unit 5.9

## Unit 6: DC current

- Unit 6.1
- Unit 6.2
- Unit 6.3
- Unit 6.4
- Unit 6.5
- Unit 6.6
- Unit 6.7
- Unit 6.8

## Unit 7: AC current

- Unit 7.1
- Unit 7.2

Unit 7.3

Unit 7.4

Unit 7.5

Unit 7.6

Unit 7.7

Unit 7.8

Unit 7.9

Unit 7.10

Unit 8: Practices

ADDITIONAL COMMENTS, REMARKS

The complementary information to each unit is developed on the Virtual Campus platform of the course.

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	E05 G01 G06	1	25	N		Theoretical classes of the subject in which the syllabus is developed
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	E05 G01 G04 G06	1	25	N		During the classes there will be demonstrations and exercises of those required points
Computer room practice [ON-SITE]	Guided or supervised work	E05 G21	0.16	4	Y	Y	During the practical sessions, the realization of the practicals and the results obtained will be evaluated in-situ. In the case of not being able to attend the sessions for justified reasons, in the ordinary exam there will be a test that allows to pass this part.
Laboratory practice or sessions [ON-SITE]	Group Work	E05 G07 G21	0.12	3	Y	Y	During the laboratory sessions, the performance of the practices and the results obtained will be evaluated in-situ. In the case of not being able to attend the sessions for justified reasons, in the ordinary call there will be a test that allows to pass this part.
Writing of reports or projects [OFF-SITE]	Cooperative / Collaborative Learning	E05 G03	1.6	40	Y	Y	In general, for each of the practices a report will be delivered describing the work carried out, and showing the results and analysis, as well as the main conclusions. If plagiarism is detected in any of the deliveries, the grade will be 0 points in that activity, both for the person / group who has plagiarized and for the one who has allowed it (art. 9 REE).
Study and Exam Preparation [OFF-SITE]	Self-study	E05 G12	2	50	N		Autonomous work of the student to prepare the subject
Individual tutoring sessions [ON-SITE]	Guided or supervised work	E05 G01 G03 G04 G06 G12	0.02	0.5	N		Resolution of doubts and review of grades
Progress test [ON-SITE]	Assessment tests	E05 G01 G03 G04 G06	0.04	1	Y	N	1 or 2 written evaluation tests will be established throughout the semester. This activity will be recovered with a new test in ordinary or extraordinary exams. The fraudulent realization of the tests will suppose a grade of 0 points (art. 9 REE).
Final test [ON-SITE]	Assessment tests	E05 G01 G03 G04 G06	0.06	1.5	Y	Y	Corresponds to the test to be carried out on the date of the ordinary exam. This activity will be recovered with a new test on the date of the extraordinary exam. The fraudulent realization of the tests will suppose a grade of 0 points (art. 9 REE).
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

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
Test	80.00%	80.00%	The written tests will be weighted to obtain a numerical score between 0 and 10. This test can be divided into partial tests carried out throughout the course. This qualification will represent 80% of the total grade of the subject.
Practicum and practical activities reports assessment	20.00%	20.00%	The exercises delivered, together with the laboratory practices and their public exposure, will be rated from 0 to 10. This qualification means 20% of the total qualification of the subject.
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:

It is necessary to obtain a grade greater than or equal to 4 points in each of the written tests to be able to average with the rest of the evaluation activities. The average of all the evaluation activities must be equal to or greater than 5 points to pass the subject.

The final exam will be a global test that allows to overcome separately both the practical and the theoretical / practical contents developed throughout the course for that student who has not passed any of the partial evaluation tests.

##### Non-continuous evaluation:

The final exam will be a global test that allows to overcome separately both the practical and the theoretical / practical contents developed throughout the course for that student who has not passed any of the partial evaluation tests.

#### Specifications for the resit/retake exam:

The final exam will be a global test of the whole subject.

#### Specifications for the second resit / retake exam:

The final exam will be a global test of the whole subject.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
<b>Hours</b>	<b>hours</b>
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	40
Study and Exam Preparation [AUTÓNOMA][Self-study]	50
Individual tutoring sessions [PRESENCIAL][Guided or supervised work]	.5
Progress test [PRESENCIAL][Assessment tests]	1
Final test [PRESENCIAL][Assessment tests]	1.5
<b>General comments about the planning:</b> The topics will be taught consecutively adapting to the actual calendar that is held in the semester in which the subject is located. With a periodicity of two weeks mandatory tasks will be proposed on the subjects taught.	
<b>Unit 1 (de 8): Thermodynamics</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3
<b>Unit 2 (de 8): Optics and Acoustics</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3
<b>Unit 3 (de 8): Hydrostatics and Hydrodynamics</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	5
<b>Unit 4 (de 8): Electrostatics</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3.5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3.5
<b>Unit 5 (de 8): Magnetostatics and Magnetic Induction</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3.5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3.5
<b>Unit 6 (de 8): DC current</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	2.5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	2.5

Unit 7 (de 8): AC current	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	4.5
Unit 8 (de 8): Practices	
<b>Activities</b>	<b>Hours</b>
Computer room practice [PRESENCIAL][Guided or supervised work]	4
Laboratory practice or sessions [PRESENCIAL][Group Work]	3
<b>Comment:</b> The practices are distributed throughout units 1-7.	
Global activity	
<b>Activities</b>	<b>hours</b>
Final test [PRESENCIAL][Assessment tests]	1.5
Class Attendance (theory) [PRESENCIAL][Lectures]	25
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	25
Computer room practice [PRESENCIAL][Guided or supervised work]	4
Laboratory practice or sessions [PRESENCIAL][Group Work]	3
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	40
Study and Exam Preparation [AUTÓNOMA][Self-study]	50
Individual tutoring sessions [PRESENCIAL][Guided or supervised work]	0.5
Progress test [PRESENCIAL][Assessment tests]	1
<b>Total horas: 150</b>	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Alonso, Marcelo	Física	Addison Wesley Longman		968-444-224-6	1998	
Belmar, F.	Problemas de física : mecánica, electromagnetismo y ondas	Tebar Flores		84-7360-186-6	1998	
Giles, RanaId V.	Mecánica de los fluidos e hidráulica	McGraw-Hill		978-84-481-1898-3	2003	
González, Félix A. (González Hernández)	La física en problemas	Tebar Flores		84-7360-141-6	1995	
Juana Sardón, José María de	Electromagnetismo : problemas de exámenes resueltos	Paraninfo		84-283-1992-8	1993	
Juana Sardón, José María de	Mecánica : problemas de exámenes resueltos	Paraninfo		84-283-2053-5	1993	
Nelson, E. W.	Mecánica vectorial : estática y dinámica	McGraw-Hill		84-481-2950-4	2004	
Serway, Raymond A.	Física	Thomson-Paraninfo		84-9732-169-3 (T.II)	2003	
Tipler, Paul Allen (1933-)	Física para la ciencia y la tecnología	Reverté		978-84-291-4430-7 (v	2013	
Young y Freedman	Física universitaria	Pearson		978-607-32-2124-5	2013	