

Course guide

390108 - FF2 - Physics II

Last modified: 24/01/2025

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 748 - FIS - Department of Physics.

Degree: BACHELOR'S DEGREE IN BIOSYSTEMS ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN FOOD ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN AGRONOMIC SCIENCE ENGINEERING (Syllabus 2018). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Alonso Muñoz, Sergio

Others: Clara Prats Soler,
Mazon Bueso, Jordi,
Carles Rubio,
Arnau Prats

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

2. Knowledge of the basic concepts of mechanics, thermodynamics, electromagnetic fields and waves, and ability to apply them in engineering problems.

Transversal:

1. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.

TEACHING METHODOLOGY

The theory classes will consist of an introduction of the concepts required to achieve the course objectives. This will be done by the lecturer that will also show the use of these concepts on problems solving. The practical classes will be divided into problems sessions and laboratory practices. These sessions will be guided by the lecturer, and the students will work in groups. The teamwork capacity of students will be fostered, as well as their problem solving capacity. The support materials include the practices guides, problems lists and some notes of the course. These materials will be available at ATENEA.

LEARNING OBJECTIVES OF THE SUBJECT

At the end of the course students will have attained basic knowledge of static, electromagnetism, especially electric circuits, heat transport and fluid dynamic. Students will be able to solve problems and questions related to these topics. Students will be able to put into practice knowledge and skill acquired in later courses, in particular, in subjects such as technological fundamentals of engineering or installations and agro-industrial buildings. In parallel, students will have to acquire a general view of science and the scientific method, to use dimensional analysis in problems solving and results verification, and to know the different mathematical skills that are used during the course very well.



STUDY LOAD

Type	Hours	Percentage
Hours large group	40,0	26.67
Self study	90,0	60.00
Hours small group	20,0	13.33

Total learning time: 150 h

CONTENTS

-

Description:

-

Full-or-part-time: 8h

Theory classes: 3h

Self study : 5h

-

Description:

-

Full-or-part-time: 42h

Theory classes: 11h

Laboratory classes: 6h

Self study : 25h

-

Description:

-

Full-or-part-time: 16h

Theory classes: 4h

Laboratory classes: 2h

Self study : 10h

-

Description:

-

Full-or-part-time: 27h

Theory classes: 8h

Laboratory classes: 4h

Self study : 15h



-

Description:

-

Related activities:

-

Full-or-part-time: 57h

Theory classes: 14h

Laboratory classes: 8h

Self study : 35h

ACTIVITIES

Lectures

Full-or-part-time: 34h

Theory classes: 34h

name english

Full-or-part-time: 6h

Theory classes: 6h

Guided exercise practicals

Full-or-part-time: 16h

Laboratory classes: 16h

english

Laboratory

Full-or-part-time: 10h

Self study: 6h

Laboratory classes: 4h

-

Full-or-part-time: 60h

Self study: 60h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Sears, Francis Weston; Zemansky, Mark Waldo; Young, Hugh D. Física universitaria [on line]. 6ª ed. México, etc.: Addison-Wesley Iberoamericana, 1988 [Consultation: 14/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=8236. ISBN 0201640422.
- Bauer, W.; Westfall, Gary D.; Álvarez Díaz, Jorge. Física para ingeniería y ciencias. Vol. 1. México [etc.]: McGraw-Hill/Interamericana, 2011. ISBN 9786071505453.
- Bauer, W.; Westfall, Gary D.; Álvarez Díaz, Jorge. Física para ingeniería y ciencias, con física moderna. Vol. 2 [on line]. México [etc.]: McGraw-Hill/Interamericana, 2011 [Consultation: 26/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=5627. ISBN 9786071505460.
- Beer, Ferdinand Pierre; Johnston, E. Russell; Eisenberg, Elliot R. Mecánica vectorial para ingenieros. Vol. 1, Estática [on line]. 8a ed. México [etc.]: McGraw-Hill, 2007 [Consultation: 15/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=11980. ISBN 9789701061039.
- Hibbeler, R. C.; Murrieta Murrieta, Jesús Elmer. Ingeniería mecánica : estática [on line]. 14a ed. Ciutat de Mèxic: Pearson, 2016 [Consultation: 26/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6763. ISBN 9786073237079.
- Giró i Roca, Antoni. Física per a estudiants d'informàtica [on line]. Barcelona: EDIUOC, 1998 [Consultation: 15/07/2022]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/reader.action?docID=3206945>. ISBN 8495131021.
- Tipler, Paul Allen; Mosca, Gene. Física para la ciencia y la tecnología(VOL. 1) [on line]. 6a ed. Barcelona [etc.]: Reverté, 2010 [Consultation: 21/07/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=10372. ISBN 9788429144291.
- Tipler, Paul Allen; Mosca, Gene. Física para la ciencia y la tecnología [on line]. 6a ed. Barcelona [etc.]: Reverté, 2010 [Consultation: 17/04/2020]. Available on: http://www.ingebook.com/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=6537. ISBN 9788429144307.

Complementary:

- Çengel, Y.A.; Boles, M.A. Termodinámica [on line]. 5a ed. Mèxic: McGraw-Hill, 2006 [Consultation: 15/07/2022]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=5808940>. ISBN 9701056116.
- Martínez, S. Fonaments de Física. Barcelona: Enciclopèdia Catalana, 1991.
- Serway, R.A. Electricidad y magnetismo. Mèxic: McGraw-Hill, 1999. ISBN 9701025636.