

25870 - Mathematics II

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	558 - Bachelor's Degree in Industrial Design and Product Development Engineering
ECTS	6.0
Course	1
Period	Second semester
Subject Type	Basic Education
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

BC01. Students have demonstrated knowledge and understanding in a field of study that is part of the general secondary education curricular, and is typically at a level which, although it is supported by advanced textbooks, includes some aspects that involve knowledge of the forefront of their field of study.

BC02. Students can apply their knowledge to their work or vocation in a professional manner and have competences typically demonstrated through devising and defending arguments and solving problems within their field of study.

BC03. Students have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include an important reflection on social, scientific or ethical issues.

BC04. Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

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BC05. Students have developed those skills needed to undertake further studies with a high degree of autonomy.

GC04. Ability to organize time effectively and coordinate activities to acquire new knowledge quickly and perform under pressure.

GC05. Capacity to collect, manage, analyze and synthesize information from various sources for the development of design projects and product development. Capacity to use this documentation to obtain conclusions aimed at solving problems and making decisions with initiative, creativity and critical thinking, in order to generate new product concepts, new ideas and solutions.

GC06. Ability to generate the necessary documentation for the proper transmission of ideas through graphics, reports and technical documents, models and prototypes, oral presentations in Spanish and other languages.

GC07. Ability to use and master techniques, skills, tools and techniques and communication and others specific of design engineering needed for design practice.

GC08. Ability to learn continuously, to develop autonomous learning strategies and to work in multidisciplinary groups with motivation and determination to achieve goals.

SC01. Ability to solve mathematical problems that may arise in Engineering in Industrial Design and Product Development. Ability to apply knowledge of linear algebra; geometry; differential geometry; differential and integral calculus; differential equations and partial differential equations; numerical methods; numerical algorithmic; statistical and optimization.

BC: BASIC COMPETENCES. GC: GENERAL COMPETENCES. SC: SPECIFIC COMPETENCES.

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

This course is divided into:

- Lectures (theory and problem solving) (42 hours).
- Computer lab sessions (12 hours).
- Group work (20 hours).
- Study time (73 hours).
- Exams (3 hours).

Lectures, problem solving and computer lab activities will be used to achieve students learn the topics of the subject. Computer lab sessions will take place in a laboratory. We will make use of Maxima, a computer algebra system. Group work will be guided by regular meetings with the teachers and seminars about the covered topics.

5.2. Learning activities

5.5. Bibliography and recommended resources**BIBLIOGRAFIA RECOMENDADA****Basic bibliography:**

1. Hernández Rodríguez, Eugenio. Álgebra lineal y geometría / Eugenio Hernández Rodríguez, María Jesús Vázquez Gallo, María Ángeles Zurro Moro. 3ª ed. Madrid: Pearson, D.L. 2012.
2. Merino González, Luis M.. Álgebra lineal: con métodos elementales / Luis M. Merino González, Evangelina Santos Aláez. 1ª ed., 4ª reimp. Madrid: Paraninfo, 2010.

Recommended bibliography:

1. Anton, Howard. Elementary linear algebra: with supplemental applications / Howard Anton, Chris Rorres . 10th ed. New York [etc.]: John Wiley and Sons, cop. 2011.
2. Arvesú Carballo, Jorge. Problemas resueltos de álgebra lineal / Jorge Arvesú Carballo, Francisco Marcellán Español, Jorge Sánchez Ruiz. Madrid: Paraninfo, D.L. 2015.
3. Faires, J. Douglas. Métodos numéricos / J. Douglas Faires, Richard Burden; traducción y revisión técnica Pedro J. Paul Escolano. 3ª ed. Madrid [etc]: Thomson, D.L. 2004.
4. Larson, Ron. Cálculo y geometría analítica / Roland E. Larson, Robert P. Hostetler, Bruce H. Edwards; Con la colaboración de David E. Heyd. 6ª ed. en español Madrid [etc.]: McGraw-Hill, D.L. 1999.
5. Larson, Ron. Introducción al álgebra lineal / Roland E. Larson, Bruce H. Edwards. 1ª ed., 5ª reimp. Mexico [etc]: Limusa Noriega, cop. 2002.
6. Lay, David C.. Álgebra lineal y sus aplicaciones / David C. Lay; traducción Jesús Elmer Murrieta Murrieta; revisión técnica Javier Alfaro Pastor. 3ª ed. act. [en español] México: Pearson Educación, 2007.
7. Nakos, George. Algebra lineal con aplicaciones / George Nakos, David Joyner. México: International Thomson Editores, cop. 1999.
8. Rojo, Jesús. Algebra lineal / Jesús Rojo. 2ª ed. Madrid [etc.]: McGraw-Hill Interamericana, D. L. 2007.
9. Rojo, Jesús. Ejercicios y problemas de algebra lineal / Jesús Rojo, Isabel Martín. 2ª ed. Madrid [etc.]: McGraw-Hill, D.L. 2004.
10. Strang, Gilbert. Algebra lineal y sus aplicaciones / Gilbert Strang; versión española de Manuel López Mateos, con la colaboración de Margarita de Meza. [1ª ed., 6ª reimp.] México: Addison-Wesley Iberoamericana, 1990.
11. Villa, Agustín de la.. Problemas de álgebra / Agustín de la Villa. [4ª ed.] Madrid: CLAGSA, D.L. 2010.
12. Zill, Dennis G.. Cálculo con geometría analítica / Dennis G. Zill México, D.F.: Grupo Editorial Iberoamérica, 1996.