30304 - Mathematics II

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	438 - Bachelor's Degree in Telecomunications Technology and Services Engineering
ECTS	6.0
Year	1
Semester	First semester
Subject Type	Basic Education
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The learning process of this subject is based on the continuous personal work of the student addressed by the learning activities pointed out in item 5.2.

Togehter with such activities we may inlcude the **Course on Information Management (Curso en Gestión de la Información)** offered by Biblioteca Hypatia to the students from first course in some degrees.

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5.2.Learning tasks

The program offered to the students to help them in getting the expected learning results comprises the following activities:

1. **Type I: Master classes (42 hours)** . Three hours per week will be devoted to classes of theory and problems in which the contents and technical results of the subject will we presented, complemented with the resolution of problems and practical exercises. Both activities will be combined to improve the understading of the subject as much as possible. The participation of the student will be fostered through questions and brief discussions.
2. **Type II: classes of problems (6 hours)** . Classes intended for the whole class of students within a schedule and in a classroom established by the center. The students may have available a list of problems and practical exercises. Some of them will be solved in class, while others will serve as material for autonomous work of the student.
3. **Type III: practical classes (6 sessions of 2 hours each)** . With the students distributed in three subgroups, these classes will take place within a schedule and in a classroom established by the center. In these sessions the students, supervised by the professor, will work by themselves doing the proposed exercises by hand and with a computer.
4. **Supervised projects** in which the professor will guide the students in the development of complementary topics of the subject or in the resolution of some problems without providing directly the solution.

5.3.Syllabus

- Modular arithmetic. Polinomials
- Vector spaces
- Linear transformations. Matrix equivalence. Aplication to linear systems of equations
- Numerical methods for the resolution of linear systems of equations
- Eigenvectors and eigenvalues. Matrix similarity
- Inner product and applications

5.4.Course planning and calendar

Calendar for face-to-face sessions, exams and project presentations

The calendar and schedule for the master classes, practical sessions and classes of problems will be established by the center.

The calendar of exams will be established by the center, while the concrete schedule will be established by the professor according to the regulations from the University of Zaragoza.

The intermediate tests and the project presentations will take place at a date previously announced by the professor in the master clases.

5.5.Bibliography and recommended resources

Basic textbooks:

- Biggs, Norman L.. Matemática discreta / Norman L. Biggs ; traducido por Marc Noy . - 1ª ed., 1ª reimp. Barcelona : Vicens Vives, 1998
- Burgos Roman, Juan de. Algebra lineal y geometría cartesiana / Juan de Burgos Román. 3ª ed. Madrid :

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McGrawHill, D.L. 2006
- 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

Complementary textbooks:

- Arvesú Carballo, Jorge. Álgebra lineal y aplicaciones / Jorge Arvesú Carballo, Renato Álvarez Nodarse, Francisco Marcellán Español. Madrid : Síntesis, D.l. 1999
- Arvesú Carballo, Jorge. Problemas resueltos de álgebra lineal / Jorge Arvesú Carballo, Francisco Marcellán Español, Jorge Sánchez Ruiz. Madrid : Thomson-Paraninfo, D.L. 2005
- Castellet, Manuel. Algebra lineal y geometría / Manuel Castellet, Irene Llerena ; con la colaboración de Carlos Casacuberta. Barcelona [etc.] : Reverté, D.L. 2000
- Espada Bros, Emilio. Problemas resueltos de álgebra T.I / Emilio Espada Bros. 4a. ed. Barcelona : EDUNSA, 1994
- Espada Bros, Emilio. Problemas resueltos de álgebra T.II / Emilio Espada Bros. 4a. ed. Barcelona : EDUNSA, 1994
- Merino González, Luis M. : Álgebra lineal : con métodos elementales / Luis M. Merino González, Evangelina Santos Aláez. - 1ª ed., 4ª reimp. Madrid : Paraninfo, 2010
- Noble, Ben. Algebra lineal aplicada / Ben Noble, James W. Daniel ; traducción, Virgilio González Pozo ; revisión técnica, Mary Glazman Nowolski. 3a. ed México [etc.] : Prentice-Hall Hispanoamericana, cop. 1989
- Rojo, Jesús. Ejercicios y problemas de algebra lineal / Jesús Rojo, Isabel Martín. 2ª ed. Madrid [etc.] : McGraw-Hill, D.L. 2004
- Strang, Gilbert. Algebra lineal y sus aplicaciones / Gilbert Strang ; revisión técnica, Edmundo Palacios Pastrana . 4ª ed. México D. F. : International Thomson, cop. 2007