Universidad Zaragoza

Academic Year/course: 2022/23

27015 - Numerical Analysis II

Syllabus Information

Academic Year: 2022/23
Subject: 27015 - Numerical Analysis II
Faculty / School: 100 - Facultad de Ciencias
Degree: 453 - Degree in Mathematics
ECTS: 9.0
Year: 3
Semester: Annual
Subject Type: Compulsory
Module:

1. General information

1.1. Aims of the course

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/es/), in such a way that the acquisition of the learning outcomes of the module provides training and competence to contribute to some extent to their achievement: (4) Quality education, (5) Gender equality, (8) Decent work and economic growth, (9) Industry, innovation and infrastructure, (10) Reducing inequality, (17) Partnerships for the goals.

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, problem-solving sessions, tutorials and autonomous work and study.

4.2. Learning tasks

This course is organized as follows:

- **Lectures.**
- **Problem-solving sessions.** These sessions will be held in small groups. Acquired concepts are trained with here. The different computational methods and algorithms are performed in a scientific programming language, checking the different algorithms and methods with test problems.
- **Computer lab sessions** in small groups
- **Tutorials.**
- **Autonomous work and study.** Autonomous study, complemented with tutorials are fundamental in the learning process.

Teaching and assessment activities will be on-site. However, if the sanitary measures or the regulations by competent authorities and by the Universidad de Zaragoza require it, these activities will be to a greater or lesser extent on-line.

4.3. Syllabus

- **Topic 1.** Polynomial interpolation.
- **Topic 2.** Spline interpolation.
- **Topic 3.** Numerical differentiation.
- **Topic 4.** Numerical quadrature.

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Sciences website and Moodle.

4.5. Bibliography and recommended resources

- Gasca, Mariano. Cálculo numérico : unidad didactica 1 / preparada por Mariano Gasca González. - [6a. ed.] Madrid : Universidad Nacional de Educación a Distancia, 1991
- Burden, Richard L.. Análisis numérico / Richard L. Burden, J. Douglas Faires . - 6a ed.,rev. México [etc.] : International Thomson, cop. 1998
- 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
- Kincaid, David. Análisis numérico : las matemáticas del cálculo científico / David Kincaid y Ward Cheney ; versión en español de Rafael Martínez Enríquez y Carlos Torres Alcaraz Wilmington, Delaware : Addison-Wesley Iberoamericana, cop. 1994

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=27015