27014 - Complex Analysis

Información del Plan Docente

Academic Year	2017/18
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.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

- Theoretical and problem sessions on the blackboard.
- Use of Moodle for communicating and displaying learning material.
- Mentoring.

5.2.Learning tasks

- Master classes on theoretical results and key problems.
- Problem sessions to understand and apply the theoretical results.

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- Problem assignments for individual work.
- Individual tutoring.

See http://www.unizar.es/analisis_matematico/docencia.html and https://moodle2.unizar.es/add/ for more information and material.

5.3.Syllabus

1. Holomorphic functions. Cauchy-Riemann conditions. Harmonic functions.
2. Analytic functions. Power series. Elementary functions.
3. Complex integration. Cauchy local theory.
4. Cauchy global theory. Cycles and homology. Simple connection.
5. Zeroes and singularities. Meromophic functions. Laurent expansions.
6. Residue theorem and applications.
7. Conformal mappings.

5.4.Course planning and calendar

- Three hours weekly of master classes all year long.
- Lessons 1,2,3 correspond to the first semester. Lessons 4 to 7 to the second semester.
- Exam period and dates and the academic calendar is available at the Faculty of Science web page, http://ciencias.unizar.es/ .

5.5.Bibliography and recommended resources

- Conway, John B.. Functions of one complex variable. 2nd ed., New York, Springer, 1978.
- Palka, Bruce P. An introduction to complex function theory. New York, Springer, 1991.
- Ponnusamy, S.. Complex variables with applications. Herb Silverman, Boston, Birkhauser, 2006.
- Rudin, Walter. Análisis real y complejo; traducción José María Martinez Ansemil. 3a. ed., Madrid, McGraw-Hill, 1987.

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