



COURSE DATA

DATA SUBJECT

Code: 43981
Name: Introduction to mathematical research
Cycle: Master's Degree / Doctorate
ECTS Credits: 3
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2183 - Master's Degree in Mathematical Research	Facultat de Ciències Matemàtiques	1	First quarter
3138 - PhD in Mathematics	Escola de Doctorat		First quarter
3138 - PhD in Mathematics	Escola de Doctorat		First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2183 - Master's Degree in Mathematical Research	Introduction to mathematical research	COMPULSORY
3138 - PhD in Mathematics		
3138 - PhD in Mathematics		

COORDINATION

CORDERO CARRION ISABEL

MARTI RAGA MARIA CARMEN

SUMMARY

The main goal of the course is to introduce the master's students to group work in mathematical research, preparing them to know how to communicate mathematical ideas and reasoning to an audience composed of mathematicians.

The students, divided into groups, will work on topics assigned at the beginning of the course that will be presented at a conference at the end of it. They will present their work to an audience made up not only of the master's students but also of some of the master's professors, undergraduate and doctoral students.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE



There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

No needed.

COMPETENCES / LEARNING OUTCOMES

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Capacidad de integrar conocimientos y formular juicios.

Que los estudiantes comprendan los conceptos y las demostraciones rigurosas de teoremas fundamentales de alguna de las áreas específicas de las Matemáticas.

Que los estudiantes comprendan los conceptos y las demostraciones rigurosas de teoremas fundamentales de áreas transversales de las Matemáticas.

Que los estudiantes posean la capacidad para enunciar y verificar proposiciones en alguna de las áreas de las Matemáticas y para transmitir los conocimientos matemáticos adquiridos, oralmente y por escrito.

Que los estudiantes sean capaces de acceder a las bases de datos bibliográficas especializadas utilizando las nuevas tecnologías.

Que los estudiantes sean capaces de sintetizar el contenido de seminarios y coloquios sobre temas de alguna de las áreas en Matemáticas.

Que los estudiantes sean capaces de trabajar autónomamente y en equipo.

Que los estudiantes sepan aplicar los conocimientos y habilidades adquiridas planificando el tiempo y los recursos disponibles.

Que los estudiantes sepan recopilar la información necesaria para abordar un problema y sintetizarla.

Que los estudiantes tengan capacidad para elaborar y desarrollar razonamientos lógico-matemáticos e identificar errores en razonamientos incorrectos.

Saber escribir una memoria de un trabajo académico realizado.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

DESCRIPTION OF CONTENTS

**WORKLOAD****PRESENCIAL ACTIVITIES**

Activity	Hours
Theory	30,00
Total hours	30,00

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	15,00
Independent study and work	20,00
Preparation of lessons	10,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	45,00

TEACHING METHODOLOGY

The development of the subject is based on teamwork. Work groups of 2 to 4 people will be formed. Each group will choose a work topic, either from the list of topics provided by the professor or proposed by the group members, evaluated and accepted by the professor in charge of the subject. Team members should learn to:

- Divide the work to be done.
- Argue with team members.
- Review the work done by other team members.
- Organize the different provisional versions of a document prepared by several authors.
- Gather the necessary information outside the group.

The professor will propose tasks related to the work topics and review their status during the classes. The necessary techniques for the initial search of bibliographic references to understand the topic, or updated references to know the current state of the art, as well as other topics related to making presentations for scientific conferences, doctoral studies, etc., will be also explained.

Throughout the course, each group must prepare an oral presentation and a summary of it per person, as well as a joint written contribution (in coordination with the subject Methodological Tools in Mathematical Research). These tasks will be carried out with the help of the contents of the master's compulsory methodological subjects.

The written contributions will be made using LaTeX and a predefined style. The oral presentation will be made with the help of an appropriate LaTeX style for presentations such as Beamer or similar. It will be also interesting that the documents include graphic content obtained with general-purpose mathematical software.

EVALUATION



The final grade will be the result of averaging the grade of the presentation on the day of its oral presentation, the grade of the submitted abstract of the talk and the grade that the professor may have assigned to each student according to the work they have done throughout the course.

REFERENCES