Academic Year/course: 2022/23

69766 - Suplementary Course in Mathematics

Syllabus Information

Academic Year: 2022/23
Subject: 69766 - Suplementary Course in Mathematics
Faculty / School: 100 - Facultad de Ciencias
Degree: 627 - Master's Degree in Circular Economy
ECTS: 3.0
Year: 01
Semester: First semester
Subject Type: ENG/Complementos de Formación
Module:

1. General information

1.1. Aims of the course

The *Mathematics Supplements* course allows achieving the knowledge and skills on Mathematics required for the adequate follow-up of the compulsory and optional courses of the Master's Degree in Circular Economy.

These approaches and aims are aligned with Sustainable Development Goal (SDG) No. 12 (Responsible Consumption and Production) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/es/), in such a way that the acquisition of the learning results of the subject provides training and competence to contribute to a certain extent to its achievement.

1.2. Context and importance of this course in the degree

The *Mathematics Supplements* course is designed for graduates in Law or related degrees. It is taught in the first months of teaching the Master in Circular Economy. The course is taught from the University of Zaragoza.

1.3. Recommendations to take this course

Mathematics Supplements constitutes a novel subject for the students of the Master with little training in Mathematics. Regular use of the learning platform and daily study of the concepts presented are recommended, with special emphasis on solving practical activities. Likewise, it is vital to consult the doubts and questions that pose difficulties in the teaching and learning process, for which personalised tutorials should be used.

2. Learning goals

2.1. Competences

BASIC COMPETENCES

CB6 - Have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with the first cycle, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context.

CB7 - Can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.

CB8 - Have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements.

CB9 - Can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and nonspecialist audiences clearly and unambiguously.

CB10 - Have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

GENERAL COMPETENCES

CG1 - Obtain information in Spanish and English using information technologies efficiently

CG2 - Manage, critically analyse and synthesise information

CG3 - Critically reflect in a systemic way and using causal relationships

CG4 - Formulate, analyse, evaluate and compare in a multidisciplinary way new or alternative solutions for different problems

CG5 - Work in interdisciplinary groups

CG6 - Transmit information efficiently through information and communication technologies

CG7 - Develop management skills (decision making, goal setting, problem definition, design, and evaluation)

CG8 - Properly manage available resources on time

SPECIFIC COMPETENCES

CE1 - Manage the vocabulary and concepts required for learning the fundamentals of Circular Economy.

2.2. Learning goals

The student, passing this subject, achieves the following results:

1. Be able to correctly interpret and contextualise commercial arithmetic parameters to solve problems in the financial mathematics field (capitalisation and simple and compound amortisation) using the appropriate calculation methods or technological resources.

2. Be able to solve problems related to the social sciences through the use of equations or systems of simple equations.

3. Be able to perform data analysis using software.

4. Be able to interpret basic statistical measures and use graphs to show relevant information.

5. Know the basic tools of statistical inference for decision-making.

2.3. Importance of learning goals

Obtaining the learning results is essential for proper monitoring of the compulsory and optional subjects of the Master's Degree in Circular Economy.

3. Assessment (1st and 2nd call)

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

Written test that will consist of short questions and resolution of various problems. Both the correct application of the techniques and the ability to interpret the results will be assessed: 100 %.

The number of official exam sessions to which enrollment entitles (2 per enrollment) as well as the consumption of these calls will be adjusted to the Rules of Permanence in Master's Studies and the Rules of Learning Assessment of the University of Zaragoza (https://ciencias.unizar.es/normativas-asuntos-academicos). To this last regulation, the general criteria for the design of the tests and the grading system will also be adjusted, and according to the same, the time, place and date on which the review will be held when publishing the qualifications will be made public.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

Learning in this subject is based on the combination of the expository method and problem solving.

According to the expository method, the professor develops the presentation of the topics before the students present in the same classroom or in other universities through videoconference. In addition, other teaching materials will be included in the Moodle platform that will allow dedicating some of the classes to interaction with students, posing questions that allow relating concepts.

The approach, methodology and evaluation of this guide are prepared to be the same in any teaching scenario. They will be adjusted to the socio-sanitary conditions of each moment, as well as to the indications given by the competent authorities.

4.2. Learning tasks

This is a 6 ECTS credits course organised as follows:
- Lectures (1.6 ECTS credits: 16 hours). Whole group sessions of 50 minutes each one will be taken. Lecturers explain the theoretical contents and solve representative applied problems. Learning materials will be available on the virtual platform Moodle (https://moodle.unizar.es/add/course/view.php?id=47367&lang=en). Regular attendance is highly recommended.
- Practice sessions (4.4 ECTS credits: 44 hours, including 8 face-to-face hours). Solving problems will be required.
- Autonomous work and study (8.4 ECTS credits: 84 hours). Students are expected to study theory.
- Assessment tasks (0.6 ECTS credits: 6 hours). A final written examination including short answer and problem-solving questions will be carried out.

4.3. Syllabus

1. Scientific notation.

2. Logarithm.

3. Representation of functions.

4. Linear, quadratic, and reducible equations, exponential and logarithmic. Applications.

5. Equations and systems of equations. Classification. Geometric interpretation.

6. Exploratory data analysis.

7. Probability models.

8. Basic concepts of statistical inference.

9. Operations with financial capital. Percentage increases and decreases. Calculation method or adequate technological resources.

10. Percentage increases and decreases.

11. Bank fees and interests.

12. Simple and compound capitalisation and amortisation.

4.4. Course planning and calendar

Information on schedules, calendar, and exams is published on the Master's page on the website of the Faculty of Sciences of the University of Zaragoza (https://ciencias.unizar.es/master-en-economia-circular).Presentation of reports will be carried out according to the calendar that will be announced in due course through the Moodle page of the subject.

4.5. Bibliography and recommended resources

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=69766&Identificador=C74180