Universitat Autònoma de Barcelona

2023/2024

Mathematics Applied to Management

Code: 106929
ECTS Credits: 6

Degree	Type	Year	Semester
2503743 Management of Smart and Sustainable Cities	FB	1	2

Contact

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Teaching groups languages

You can check it through this link. To consult the language you will need to enter the CODE of the subject.
Please note that this information is provisional until 30 November 2023.

Prerequisites

The knowledge required to complete the subject is, basically, the basic mathematics skills of the middle school le
It is also recommended to have passed, or at least completed, the subje

Objectives and Contextualisation

The subject of Mathematics Applied to Management has two main objectives:
- Introduce the basic probability and statistical tools to analyze data from
- Introduce Operational Research concepts that are especially useful in r
The theory and problem classes will be complemented with practical clas

Learning Outcomes

- CM02 (Competence) Use applied mathematics in innovative solutions to solve projects related to the management, equity and sustainability of cities.
- KM01 (Knowledge) Explain urban territorial and social processes using relevant theoretical and conceptual mathematical frameworks.
- KM03 (Knowledge) Distinguish the main statistical sources of urban data.
- SM01 (Skill) Identify situations characterised by the presence of randomness and analyse them using basic probabilistic tools.

- SM03 (Skill) Use mathematical tools to solve urban or regional management and planning problems.

Content

BLOCK I: STATISTICS

Topic 1. Descriptive statistics.
Descriptive statistics. Descriptive study of a variable: categorical (sector

Topic 2. Probability.
Notion of probability. Conditional probability and independence of events

BLOCK II: Operational Research
Introduction to discrete mathematics. Graph theory. Introduction to Graph

Methodology

The teaching methodology to be followed is oriented towards the learning of the subject by the student continued

This process is based on the realization of three types of activities that will be developed in throughout the cours

Theoretical classes: The student acquires the specific knowledge of the subject by attending lectures and supple
The teacher will provide information on the knowledge of the subject and

Problem seminars: The knowledge acquired in theoretical classes is applied through practical cases. In the class

Practice Sessions: students will have to work in teams of several people in the solving mathematical problems us
Note: 15 minutes of a class will be reserved, within the calendar establish

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes

Type: Directed			
Classes Magistrals	26	1.04	CM02, CM02
Ploblems Sessions	18	0.72	SM01, SM03, SM01
Type: Supervised			
Practices	6	0.24	KM01, SM03, KM01
Type: Autonomous			
Problems Desenvolupment	50	2	CM02, SM01, SM03, CM02
Study	42	1.68	CM02, KM03, SM01, CM02

Assessment

The evaluation of the subject will be done progressively and continuously throughout the semester.
The evaluation system is based on the following rules:

a) Scheduled evaluation process and activities
The following activities are planned:

Activity A: Practice Reports. Presentation of reports, in writing and orally, relating to the practices with a compute
of this activity will be the average of the grades obtained in each practice

Activity B: Exam Block I. Exam of the contents of Block I, to promote the consolidation of all the material worked

Activity C: Exam Block II. Examination of the contents of Blocks II, to promote the consolidation of all the material
In order to pass the subject, a minimum grade of 5 in the assessment act
note that the Practice Activity (ACTIVITY A) is not recoverable. This mea
In the event that the evaluation of any of the parties does not finally exce
Apart from the partial tests already announced in the examination calend
It is necessary to regularly consult this platform where various informatio

b) Programming of evaluation activities The calendarization of the assessment activities will be given on the first
c)Recovery process For those students who at the end of the evaluation process have not obtained a grade equa
d) Qualification review procedure For each assessment activity, a review place, date and time will be indicated w

e) Qualifications

The final grade of the subject will be calculated according to the percenta

Honor matriculations. Awarding an honors matriculation grade is solely at the faculty's discretion responsible for t

Not assessable. A student who has not attended any activity A, B or C wil
If a student appears in the first partial test and not in the second, he will g

f) Irregularities by the student, copying and plagiarism

Without prejudice to other disciplinary measures that are deemed approp
Therefore, plagiarizing, copying or letting any assessment activity be cop

g) Evaluation of repeat students

For repeat students, the grade of the activities is not saved from one cou

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final Exam	40	2	0.08	CM02, KM03
Partial Exam	40	2	0.08	CM02, KM03
Practices	20	4	0.16	KM01, SM01, SM03

Bibliography

A. Gilat, J. A. Macías, Matlab, Una introducción con ejemplos prácticos, 2006.

N. Quezada, Estadística para Ingenieros, Ed. Marcombo, 1º Edición, 2020.

A. Herrero de Egaña, M. Matilla García, A. Muñoz Cabanes, Cálculo Diferencial para Economía y Empresa, Mc-Graw-Hill, 1º Edición, 2020.

Software

The subject will use Microsoft Excel for the Statistics part.