



Universidad de Jaén

FACULTY OF SOCIAL AND LEGAL SCIENCES

Mathematics 1

2024-2025

Grado en Administración y dirección de empresas

Grado en Administración y Dirección de Empresas / Bachelor's Degree in Business

Administration and Management

Doble Grado en Administración y Dirección de Empresas y Finanzas y contabilidad

Grado en Finanzas y contabilidad

CAREA

SERVICIOS ACADÉMICOS

SERVICIOS ADMINISTRATIVOS

EXTENSIÓN UNIVERSITARIA

INFORMACIÓN GENERAL

OPERACIONES

Inicio > Servicios académicos > Guías docentes UJA

Acceso Mayores 40

Guías docentes UJA

Horarios de tutorías

Llamamientos PAU

Movilidad (Coordinador)

P.O.D.

Solicitud bilingüismo

Syllabus 2024-25 - 11111009 - Mathematics 1 (Matemáticas I)

Caption

Level 1: Tutorial support sessions, materials and exams in this language

Level 2: Tutorial support sessions, materials, exams and seminars in this language

Level 3: Tutorial support sessions, materials, exams, seminars and regular lectures in this language

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Full version (Spanish)

English

DEGREE: Grado en Administración y dirección de empresas (11111009)

FACULTY: FACULTY OF LAW AND SOCIAL SCIENCES

DEGREE: Grado en Administración y dirección de empresas (11121009)

FACULTY: FACULTY OF LAW AND SOCIAL SCIENCES

DEGREE: Doble Grado en Administración y dirección de empresas y Finanzas y contabil (11911009)

FACULTY: FACULTY OF LAW AND SOCIAL SCIENCES

DEGREE: Grado en Finanzas y contabilidad (11311009)

FACULTY: FACULTY OF LAW AND SOCIAL SCIENCES

ACADEMIC YEAR: 2024-25

COURSE: Mathematics 1

SYLLABUS

1. COURSE BASIC INFORMATION

NAME: Mathematics 1

CODE: 11111009 (*)

ACADEMIC YEAR: 2024-25

LANGUAGE: English

LEVEL: 3

ECTS CREDITS: 6.0

YEAR: 1

SEMESTER: PC

2. LECTURER BASIC INFORMATION

NAME: GÓMEZ MORENO, SAMUEL

DEPARTMENT: U124 - MATEMÁTICAS

FIELD OF STUDY: 595 - MATEMÁTICA APLICADA

OFFICE NO.: B3 - 006

E-MAIL: samuel@ujaen.es

P: 953 212398

WEBSITE: -

ORCID: <https://orcid.org/0000-0003-2233-2092>

LANGUAGE: -

LEVEL: 3

NAME: LÓPEZ MORENO, ANTONIO JESÚS

DEPARTMENT: U124 - MATEMÁTICAS

FIELD OF STUDY: 595 - MATEMÁTICA APLICADA

OFFICE NO.: B3 - 28

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P: 953212932

WEBSITE: www4.ujaen.es/~ajlopez

ORCID: <https://orcid.org/0000-0001-6701-7550>

LANGUAGE: -

LEVEL: 3

3. CONTENT DESCRIPTION

Chapter 1: Functions. The real line. Real functions of one variable. Main functions in Analysis and Economy. Limits and continuity. Economic modelling by means of functions and limits.

Chapter 2. Differentiation of functions. The derivative, pointwise rate of change in economic modelling, geometric interpretation. Computations of derivatives. Derivative and shape preserving properties of a function. L'Hôpital theorem.

Chapter 3. Integration of functions. Primitive of a function, indefinite integral and its properties. Computation of primitives. Definite integral and its properties. Applications of the definite integral.

Chapter 4. Matrices. Data representation by means of matrices. Basic definitions and matrix operations. Matrix power and matrix iterative models. Rank of a matrix. Determinant. Inverse matrix.

Chapter 5. Systems of linear equations. Vectors. Classification of systems of linear equations. Parametric expression of the solution of a linear system. Cramer's Rule and Gauss Elimination. Linear subspace. Basis, coordinates and dimension for linear subspaces.

Chapter 6. Matrix diagonalization. Diagonalization process: eigenvalues, eigenvectors and characteristic polynomial. Interpretation of eigenvalues and eigenvectors and tendency in iterative matrix models. Tendency study in matrix models.

4. COURSE DESCRIPTION AND TEACHING METHODOLOGY

Classes of theory for all the group (big group): The theoretical aspects of the subject will be exposed along with general practical examples.

Small group classes:

i) Problems classes in small groups: 15 hours will be devoted to the resolution of problems and exercises with applications in Economy.

ii) Computer classes in small groups: 15 hours will be carried out in the computer laboratory with the aid of the software Wolfram Research Mathematica.

Students with special educational needs should contact the Student Attention Service (Servicio de Atención y Ayudas al Estudiante) in order to receive the appropriate academic support.

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5. ASSESSMENT METHODOLOGY

Items considered to compute the mark:

- First item (1 point = 10% of the total mark): Participation in the activities proposed by the professor along the quadrimester.

- Second item (6 points = 60% of the total mark): Written exam at the end of the quadrimester on the applied and theoretical aspects of the subject. The mentioned exam will be considered provided that the student obtains at least 30% of the maximum mark (that is to say, 1.8, out 6 points or 3 out of 10). Under this minimum 30% the mark for the exam will be 0 points. Alternatively, a continuous assessment system could be proposed to obtain this 6 points along the quadrimester.

- Third item (1 point = 10% of the total mark): Exercises or short exams proposed by the professor along the quadrimester.

- Fourth item (2 point = 20% of the total mark): Exam in the computer classroom. Alternatively, a continuous assessment system could be proposed to obtain the point of this item along the quadrimester.

The final mark will be sum of the four indicated items.

All marks, except the one of the second item, will be maintained for all the official exam calls of the course. For item four, only the last mark obtained will be considered.

6. BOOKLIST ([Access the bibliography in the Library catalog](#))

MAIN BOOKLIST:

- Essential mathematics for economic analysis . Edition: 5th ed. Author: Sydsæter, Knut.. Publisher: Pearson Education Limited ([Library](#))
- Calculus : metric version . Edition: 11th ed.. Author: Larson, Ron. Publisher: Brooks Cole, Cengage Learning ([Library](#))
- Student solutions manual . Edition: 11th ed.. Author: Larson, Ron. Publisher: Cengage Learning ([Library](#))

7. SUSTAINABLE DEVELOPMENT GOALS

Educación de calidad

DETAILED INFORMATION

We seek to foster high-quality mathematics teaching.

8. VIRTUAL / CLASSROOM TEACHING SCENARIO

1) TEACHING METHODOLOGY AND ACTIVITIES

Teaching activities	Format(in-site/on-site)	Teaching methodology. Description
A1- Classes of theory for all the group (big group)	On-site 100%	On-site classes as scheduled in the program of the subject.
A2- Problems classes in small groups	On-site 100%	On-site classes as scheduled in the program of the subject.
A2- Practices in computers classroom	On-site 100%	On-site classes as scheduled in the program of the subject.
Tutoring	On-site/on-line	Tutoring hours will be both individual face-to-face in the office of the professor and on-line by videoconference.

2) Assesment system

The assesment system with all aspects and weights will be the one indicated for the face-to-face scenary.

The assesment for Attendance/participation and Works/exercises/short exams will be based on the on-line tools that are also used for the face-to-face modality.

The exams in item will be hold face-to-face preferably. In case that this is impossible due to number of classrooms and technical means available, an on-line videoconference exam system will be used.

3) RESOURCES

For the on-line teaching computer, tablet or mobile phone with internet connection and Wolfram Research Mathematica software installed is required. A document scanning application will be also necessary. Besides, we will make use of the Docencia Virtual system of the University of Jaén, the platform SiDoc of the Department of Mathematics as well as the Google tools offered by the University of Jaén. Moreover, the bibliographic electronic resources available through the Library of the University of Jaen will be employed.

9. VIRTUAL TEACHING SCENARIO

1) TEACHING METHODOLOGY AND ACTIVITIES

Teaching activities	Format(in-site/on-site)	Teaching methodology. Description
A1- Classes of theory for all the group (big group)	On-line	On-line classes as scheduled in the program of the subject by means videoconference and the suitable additional materials.
A2- Problems classes in small groups	On-line	On-line classes as scheduled in the program of the subject by means videoconference and the suitable additional materials.
A2- Practices in computers classroom	On-line	On-line classes as scheduled in the program of the subject by means videoconference and the suitable additional materials.
Tutoring	On-line	Tutoring hours will be on-line by videoconference.

2) ASSESMENT SYSTEM

The assesment system with all aspects and weights will be the one indicated for the face-to-face scenary.

The assesment for Attendance/participation and Works/exercises/short exams will be based on the on-line tools that are also used for the face-to-face modality.

The exams will be on-line by videoconference.

3) RESOURCES

For the on-line teaching computer, tablet or mobile phone with internet connection and Wolfram Research Mathematica software installed is required. A document scanning application will be also necessary. Besides, we will make use of the Docencia Virtual system of the University of Jaén, the platform SiDoc of the Department of Mathematics as well as the Google tools offered by the University of Jaén. Moreover, the bibliographic electronic resources available through the Library of the University of Jaén will be employed.

DATA PROTECTION CLAUSE (on line exams)

Institution in charge of data processing: Universidad de Jaén, Campus Las Lagunillas, s/n, 23071 Jaén

Data Protection Delegate: dpo@ujaen.es

Purpose: In accordance with the Universities Law and other national and regional regulations in force, carrying out exams and assessment tests corresponding to the courses students are registered in. In order to avoid frauds while sitting the exam, the exam will be answered using a videoconference system, being able the academic staff of the University of Jaén to compare and contrast the image of the person who is answering the exam with the student's photographic files. Likewise, in order to provide the exam with evidential content for revisions or claims, in accordance with current regulation frameworks, the exam will be recorded and stored.

Legitimacy: compliance with legal obligations (Universities Law) and other national and regional regulations currently in force.

Addressees: service providers who are the owners of the platforms where the exams are carried out and with whom the University of Jaén has signed the corresponding data access contracts.

Storage periods: those established in current in force regulations. In the specific case of exam videoconference recordings, not before the examination records and transcripts are closed or the exam can still be reviewed or challenged.

Rights: you can exercise your right of access, amendment, cancellation, opposition, suppression, limitation and portability by sending a letter to the postal or electronic address indicated above. In the event that you consider that your rights have been violated, you may submit a complaint to the Andalusian Council for Transparency and Data Protection www.ctpdandalucia.es

CLASS RECORDING CLAUSE PERSONAL DATA PROTECTION

Person in charge: Universidad de Jaén, Paraje Las Lagunillas, s/n; Tel.953 212121; www.ujaen.es

Data protection delegate (DPO): TELEFÓNICA, S.A.U. ; Email: dpo@ujaen.es

Procedure aim: To manage proper recordings of teaching sessions with the aim of facilitating learning process under a multimodal and/or online teaching

Period for record storage: Images will be kept during legal term according to regulations in force

Legitimacy: Data will be managed according to legal regulations (Organic Law 6/2001, December 21, on Universities) and given consent provided by selecting corresponding box in legal admission documents

Data recipients (transfers or assignments): Any person allowed to get access to every teaching modality

Rights: You may exercise your rights of access, rectification, cancellation, portability, limitation of processing, deletion or, where appropriate, opposition. To exercise these rights, you must submit a written request to the Information, Registration and Electronic Administration Service of the University of Jaén at the address above, or by e-mail to the address above. You must specify which of these rights you are requesting to be satisfied and, at the same time, you must attach a photocopy of your ID card or equivalent identification document. In case you act through a representative, legal or voluntary, you must also provide a document that proves this representation and identification. Likewise, if you consider that your right to personal data protection has been violated, you may file a complaint with the Andalusian Data Protection and Transparency Council www.ctpdandalucia.es

