



## INTRODUCTION TO STATISTICS

### 22009 - INTRODUCTION TO STATISTICS (2023-24)

#### General

**Code:** 22009

**Lecturer responsible:**

CARNERO FERNANDEZ, MARIA ANGELES

**Credits ECTS:**

**6**

Theoretical credits:

1,2

Practical credits:

1,2

Distance-base hours:

3,6

#### Departments involved

- **Dept:** FOUNDATIONS OF ECONOMIC ANALYSIS

**Area:** FOUNDATIONS OF ECONOMIC ANALYSIS

**Theoretical credits:** 1,2

**Practical credits:** 1,2

This Dept. is responsible for the course.

This Dept. is responsible for the final mark record.

#### Study programmes where this course is taught

- [DEGREE IN BUSINESS ADMINISTRATION AND MANAGEMENT](#)  
Course type: CORE (Year: 1)
- [DOUBLE DEGREE IN TOURISM AND BUSINESS ADMINISTRATION AND MANAGEMENT](#)  
Course type: CORE (Year: 1)
- [DOUBLE DEGREE IN LAW + ADE \(DADE\)](#)  
Course type: CORE (Year: 1)
- [DOUBLE DEGREE IN COMPUTER ENGINEERING AND BUSINESS ADMINISTRATION](#)  
Course type: CORE (Year: 2)

#### Competencies and objectives

#### Course context for academic year 2023-24

This is the first course in the sequence "Quantitative Methods: Statistics and Econometrics". The sequence continues in the second and third years.

## Course content (verified by ANECA in official undergraduate and Master's degrees) for academic year {0}

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### General Competences (CG)

- **CG1** : Capacitat per a la recerca i anàlisi d'informació.
- **CG4** : Aplicar a l'anàlisi dels problemes criteris professionals basats en la utilització d'instruments tècnics.
- **CG5** : Capacitat per a la presa de decisions aplicant els coneixements a la pràctica.
- **CG6** : Derivar de les dades informació rellevant impossible de reconèixer per no professionals.
- **CG8** : Analitzar els problemes amb raonament crític, sense prejudicis, amb precisió i rigor.

### General Competences acquired at University of Alicante (CGUA)

- **CGUA2** : Usar habitualment les eines informàtiques, així com la tecnologia de la informació i les comunicacions en tot el seu exercici professional.
- **CGUA3** : Capacitat de comunicació oral i escrita.

### Specific Competences (CE)

- **CE13** : A partir de dades d'interès econòmic empresarial, ser capaç d'aplicar les eines estadístiques i econòmiques adequades per a l'anàlisi de l'empresa i el seu entorn.
- **CE15** : Preparar la presa de decisions en empreses i organitzacions, especialment en els nivells operatiu i tàctic.
- **CE3** : Valorar a partir dels registres rellevants d'informació la situació i previsible evolució d'una empresa.
- **CE4** : Emetre informes d'assessorament sobre situacions concretes d'empreses i mercats.
- **CE5** : Redactar projectes de gestió global o d'àrees funcionals de l'empresa.

### Exclusive skill taught in this course

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No data

### Learning outcomes (Training objectives)

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No data

### Specific objectives stated by the academic staff for academic year 2023-24

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Enabling the students to use Excel for descriptive statistical analysis and finding binomial and normal probabilities.

## Content and bibliography

### Content for academic year 2023-24

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#### **Lesson 1: Introduction and Graphical Data Analysis**

- 1.1. Why study Statistics?
  - 1.2. Classification of variables
  - 1.3. Graphs to describe categorical variables
  - 1.4. Graphs to describe time series data
  - 1.5. Graphs to describe numerical variables
  - 1.6. Graphs to describe relationships between variables
- Basic Reference: Newbold et al. (2012), Chapter 1

#### **Lesson 2: Numerical Measures for the Description of Data**

- 2.1. Measures of central tendency and location
  - 2.2. Measures of variability
  - 2.3. Weighted mean and measures of grouped data
  - 2.4. Changes in units of measurement
  - 2.5. Measures of relationships between variables
- Basic Reference: Newbold et al. (2012), Chapter 2

#### **Lesson 3: Basic Concepts of Probability Theory**

- 3.1. Random experiments, outcomes and events
  - 3.2. Probability and its postulates
  - 3.3. Probability rules
  - 3.4. Bivariate probabilities
  - 3.5. Bayes' theorem
- Basic Reference: Newbold et al. (2012), Chapter 3

#### **Lesson 4: Discrete Probability Distributions**

- 4.1. Random variables: definition and types
  - 4.2. Probability distributions for discrete random variables
  - 4.3. Expectation and variance of a discrete random variable
  - 4.4. Binomial distribution
- Basic Reference: Newbold et al. (2012), Sections 4.1-4.4

#### **Lesson 5: Continuous Probability Distributions**

- 5.1. Continuous random variables: probability density function and cumulative distribution function
  - 5.2. Expectation and variance of a continuous random variable
  - 5.3. Uniform distribution
  - 5.4. Normal distribution
- Basic Reference: Newbold et al. (2012), Sections 5.1-5.3

#### **Lesson 6: Joint Distributions of Random Variables**

- 6.1. Joint distribution of discrete random variables
  - 6.2. Joint distribution of continuous random variables
  - 6.3. Independence, covariance and correlation
  - 6.4. Linear combinations of random variables
- Basic Reference: Newbold et al. (2012), Sections 4.7 and 5.6

## Assessment

### Assessment procedures and criteria 2023-24

GRADING IN JUNE ("Convocatoria Ordinaria", C3): The grade of all students who do not have a grade in any activity will be NOT TAKEN ("NO PRESENTADO"). The rest of the students will get a PASS ("APTO") if the weighted average of their three grades is not lower than 5 and, moreover, the grade on the exam of the Second Part is not lower than 4 (when computing the weighted average, a "NOT TAKEN" grade in any activity will be considered as equivalent to 0). The final grade of a student whose grade is not lower than 4 in the exam of the Second Part will be the weighted average of the three grades; the final grade of a student whose grade is lower than 4 in the exam of the Second Part will be the minimum between 4.5 and the weighted average.

GRADING IN JULY ("Convocatoria Extraordinaria", C4): It is possible to retake the exam of the First Part (Units 1-3) and/or the exam of the Second Part (Units 4-6). However, it is not possible to retake the grade on attendance and participation. Students who did not get a PASS in "Convocatoria Ordinaria" can decide whether they want to retake both the exam of the First Part and the exam of the Second Part, or just one of them. These two retake exams will be taken separately (one for the First Part and another for the Second Part); they will be held on the date that the Faculty indicates for exam of "Convocatoria Extraordinaria C4", and they will be similar to those given in "Convocatoria Ordinaria." The grade of all students who do not take any retake exam will be NOT TAKEN ("NO PRESENTADO"). For the rest of the students, the final grade will be calculated according to the following criteria: a) STUDENTS WHO TAKE BOTH RETAKE EXAMS: If the grade they obtain on the retake exam of the Second Part is not lower than 4, their final grade will be the weighted average of the three grades (this average will be obtained using the grades of the two exams taken in the "Convocatoria Extraordinaria", and the note of attendance and participation of the "Convocatoria Ordinaria"). If the grade they obtain on the retake exam of the Second Part is lower than 4, their final grade will be the lowest grade among 4.5 and the weighted average (i.e., they will not get a PASS); b) STUDENTS WHO ONLY TAKE THE RETAKE EXAM OF THE SECOND PART: If the grade they obtain on this retake exam is not lower than 4, their final grade will be the weighted average of the three grades (this average will be obtained using the grade of the retake exam taken in the "Convocatoria Extraordinaria", and the note of attendance and participation and of the first part exam of the "Convocatoria Ordinaria"). If the grade they obtain on the retake exam of the Second Part is lower than 4, their final grade will be the lowest grade among 4.5 and the weighted average (i.e., they will not get a PASS); c) STUDENTS WHO ONLY TAKE THE RETAKE EXAM OF THE FIRST PART: If the grade they obtained on the exam of the Second Part in "Convocatoria Ordinaria" is not lower than 4, their final grade will be the weighted average of the three grades (this average will be obtained using the grade of the retake exam taken in the "Convocatoria Extraordinaria", and the note of attendance and participation and of the second part exam of the "Convocatoria Ordinaria"). If the grade they obtained on the exam of the Second Part in "Convocatoria Ordinaria" is lower than 4, their final grade will be the lowest grade among 4.5 and the weighted average (i.e., they will not get a PASS).

ALTERNATIVE EVALUATION SYSTEM: students with curricular adaptation should contact the teacher coordinating the course.

Description	Criteria	Type	Weighting system
ATTENDANCE AND PARTICIPATION	At the beginning of the course, the instructor of each group will tell the students how this item will be assessed in his/her group. The following activities may be considered: attendance to practice sessions, presentations in class, short exams held in class, problems handed in during the course, or similar activities.	ACTIVITIES OF EVALUATION DURING THE SEMESTER	10

EXAM OF THE FIRST PART (UNITS 1, 2 AND 3)	It will be held on week 9, approximately. The exam will have two parts: the first part will be a practical exam on descriptive data analysis, using Excel; the second part will be a theoretical-practical exam in which Excel cannot be used (although a non-programmable calculator can be used), with problems similar to those of the Problem Sets that do not require Excel and some theoretical questions. The exam will be graded on a 0-10 scale: approximately 3 points for the first part, 5 points for the problems of the second part and 2 points for the theoretical questions of the second part.	ACTIVITIES OF EVALUATION DURING THE SEMESTER	45
EXAM OF THE SECOND PART (UNITS 4, 5 AND 6)	It will be held once the course is completed, on the date that the Faculty indicates for exam of "Convocatoria Ordinaria C3". It will be a theoretical-practical exam in which Excel cannot be used (although a non-programmable calculator can be used), with problems similar to those of the Problem Sets and some theoretical questions. The exam will be graded on a 0-10 scale: approximately 8 points for the problems and 2 points for the theoretical questions.	ACTIVITIES OF EVALUATION DURING THE SEMESTER	45

### Official exam dates for academic year 2023-24

Exam session	Date	Time	Group - Classroom(s) allocated	Comments
(C1) Pruebas extraordinarias de finalización de estudios	27/09/2023			
	27/09/2023			

(C3) Periodo ordinario para asignaturas de segundo semestre y anuales	07/06/2024	18:00 - 21:00	A2/A01
			A2/A02
			A2/C01
			A2/C02
			A2/C03
			A2/C04
			A2/C11
			A2/C12
			A2/C13
			A2/C14
			A2/D11
			A2/D12
			A2/D13
			A2/D14
			A3/0005
			A3/0006
			A3/0007
			A3/0008
			A3/0009
			A3/0010
A3/0011			
A3/0012			
A3/0013			
A3/0014			

(C4) Pruebas extraordinarias para asignaturas de grado y máster	10/07/2024	14:30 - 19:30	A1/Q-06X
			A1/Q-07X
			A1/Q-18X
			A1/Q-19X
			A1/Q-21G
			A1/I-36X
			A1/I-37X
			A1/I-50X
			A1/I-51X

10/07/2024 14:30 - 19:30

GROUP 51 (THEORY CLASS)	A1/Q-01G
	A1/Q-02M
GROUP 52 (THEORY CLASS)	A1/Q-01G
	A1/Q-02M

