1. BASIC INFORMATION

Course	STATISTICS AND BIG DATA II
Degree program	MARKETING
School	SOCIAL SCIENCES
Year	SECOND
ECTS	6 ECTS
Credit type	BASIC
Language(s)	ENGLISH
Delivery mode	FACE-TO-FACE (ON SITE)
Semester	THIRD SEMESTER
Academic year	2025 – 2026
Coordinating professor	MIGUEL GALIANA MARTÍNEZ
Professors	BIG DATA: GARCÍA ULL, FRANCISCO JOSÉ STATISTICS: GISBERT MULLOR, HÉCTOR

2. PRESENTATION

Statistics and Big Data are fundamentally concerned with the collection, organization, analysis, presentation and interpretation of data. data. Today, our society generates large volumes of data through mobile devices, websites, social networks, wearables, sensors, smart cities and homes, etc., and it is becoming smart cities, smart homes, etc. and it is becoming increasingly important to extract information and information and knowledge from data for decision making in multiple professional fields: economics, politics professional fields: economics, politics, engineering, social sciences, health sciences, etc.

3. COMPETENCIES AND LEARNING OUTCOMES

Core competencies:

- CB1 - Students demonstrate possession and understanding of knowledge in an area of study that is based on general secondary education, and is generally at a level that, although supported by advanced textbooks, also includes some aspects involving knowledge of general secondary education. forefront of their field of study.
- CB2 - Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defense of arguments and problem solving within their field of study.
- CB3 - Students have the ability to collect and interpret relevant data (normally within their area of study) to make judgments that include a reflection on relevant issues of a social, scientific or ethical nature.
- CB4 - Students can transmit information, ideas, problems and solutions to both a specialized and non-specialized public.
- CB5 - Students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

Cross-curricular competencies:

- CT2 - Autonomous learning: Set of skills to select strategies for searching, analysing, evaluating and managing information from different sources, as well as to learn and put into practice what has been learnt independently.
- CT5 - Analysis and problem solving: Being able to critically evaluate information, decompose complex situations into their constituent parts, recognize patterns, and consider alternatives, approaches and perspectives in order to find optimal solutions and efficient negotiations.

Specific competencies:

- CE07: Ability to apply the technical tools used in market research and take them as a criterion in decision-making, respecting fundamental rights and equality between men and women.
- CE013: Ability to interpret the economic and market data obtained in order to facilitate and improve business decision-making and marketing planning.
- CE16: Ability to produce corporate business, competitive and communication strategies of the company to apply them to marketing actions of segmentation, positioning, growth and innovation.
- CE27: Ability to collect and process large amounts of data from different national and international databases, using new digital communication techniques.
- CE28: Ability to use Big Data tools and techniques in order to prepare reports related to the economic-business reality.

Learning outcomes:

- RA1: Treatment of discrete and continuous random variables for the modelling of economic-financial variables.
- RA2: Preparation of reports relating to the economic-business reality by means of statistical inference tools.
- RA3: Treatment of large amounts of data from different national and international databases.
- RA4: Preparation of reports related to the economic-business reality by means of Big Data tools and techniques.

The table below shows the relationship between the skills developed in the subject and the learning outcomes pursued:

Competencies	Learning outcomes
CB1, CB5, CT2, CT5, CE7, CE16	RA1: Treatment of discrete and continuous random variables for the modelling of economic-financial variables.
CB1, CB2, CB3, CB4, CT2, CT5, CE13	RA2: Preparation of reports relating to the economic-business reality by means of statistical inference tools.
CB1, CB2, CB5, CT2, CT5, CE7, CE16, CE27	RA3: Treatment of large amounts of data from different national and international databases.
CB1, CB2, CB3, CB4, CT2, CT5, CE13, CE28	RA4: Preparation of reports related to the economic-business reality by means of Big Data tools and techniques.

4. CONTENT

Statistics Content:

UNIT 1: Statistical sampling and point estimation.

UNIT 2: Hypothesis testing

UNIT 3: Regression

UNIT 4: Analysis of Variance (ANOVA)

UNIT 5: Introduction to Analytics and Data Collection

Big Data Content:

UNIT 1: Big Data Infrastructure

UNIT 2: Introduction to Google MapReduce and Hadoop

UNIT 3: Data analysis and interpretation in a company

UNIT 4: Tools and techniques used in Big Data

UNIT 5: Privacy and data protection

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:
- Master class
- Case method
- Cooperative learning
- Problem-based learning
- Project-based learning

6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours the student will spend on each one:

Campus-based mode:

Learning activity	Number of hours
LA1 Tutoring	10
LA2 Master class	35
LA3 Asynchronous master classes	10
LA4 Autonomous work	40
LA5 Oral presentations	7

LA6 Case analysis and problem solving	25
LA7 Participatory group activities	20
LA8 Knowledge tests	3
TOTAL	**150**

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade. Note: for convenience of calculation, the weights of each module add up to 100%; however, each module has a weight of 50% in the final mark of the subject (the average of both will be taken):

Statistical evaluation system	Weight
Knowledge tests	50%
Oral presentations	20%
Case analysis and problem solving	20%
Performance monitoring	10%

Big Data evaluation system	Weight
Knowledge tests	50%
Oral presentations	20%
Case analysis and problem solving	20%
Performance monitoring	10%

The weight in the assessment of both Statistics and Big Data is the same and equal to 50%. In both cases, the weights of the assessment events are referred to the total grade of the subject.

In the Virtual Campus, when you access the subject, you will be able to consult in detail the assessment activities that you must carry out.

7.1. First exam period

In order to be eligible for the ordinary exam in the classroom mode, it is essential that the student reaches a minimum of 50% of class attendance, both in the Statistics and Big Data parts.

In order to pass the course in the ordinary exam session, the student must obtain a grade ≥ 5 points out of 10 in the final grade (weighted average) of the course: 50% Statistics and 50% Big Data.

To apply this weighting it is essential that at least a mark ≥ 4 points out of 10 has been obtained in the final grade in both modules.

On the other hand, in each of the two subjects, a mark ≥ 5 points out of 10 must be obtained in the knowledge tests. If the student obtains a mark of < 5 points out of 10 in any of the knowledge tests, he/she will be graded as failed in the ordinary exam with the numerical mark obtained in the failed part.

7.2. Second exam period

If this grade is not achieved, the student will have to sit the exams of the knowledge tests failed in the part of Statistics and/or Big Data in the extraordinary exam session. Again, the student must get a score ≥ 5 points out of 10 in the test.

In the case of having passed the knowledge tests in the ordinary exam, but not having enough marks to average due to the continuous assessment deliveries, the student must submit the tasks proposed by the teacher in the extraordinary exam.

The performance grade is an assessment during the teaching period that is maintained for the extraordinary call.

8. SCHEDULE

In this section you will find the timetable with dates for the delivery of evaluable activities of the subject:

Assessable activities Statistics	Deadline
Activity 1. Descriptive analysis of qualitative variables	Week 2
Activity 2. Descriptive analysis of quantitative variables	Week 4
Activity 3. Bivariate descriptive analysis between two qualitative variables.	Week 7
Activity 4. Bivariate descriptive analysis between a quantitative and a qualitative variable.	Week 9
Activity 5. Bivariate descriptive analysis between two quantitative variables and simple linear regression	Week 11
Activity 6. Final task	Week 13

Assessable activities	Deadline
Initial assessment: Descriptive statistics. Point estimation (Statistics)	Week 2
Hand in Homework Topic 1.	Week 3
Submission Hypothesis Testing (Statistics)	Week 4
Hand-in Visualisation Task (Big Data)	Week 6
Hand in Linear Regression (Statistics)	Week 7
Partial objective evaluation. (Statistics) Partial.	Week 9
Non-linear regression. (Statistics)	Week 10

Hand in Big Data	Week 13
Hand in ANOVA (Statistics)	Week 14
Hand in final work: Statistics and Big Data	Week 15-16
Final knowledge test. Statistics and Big Data	Week 17

This schedule may be subject to changes for logistical reasons relating to the activities. The student will be notified of any change as and when appropriate.

9. BIBLIOGRAPHY

The reference work for the follow-up of the subject is:

- J. Esteban García et al.; Estadística Descriptiva y nociones de probabilidad. Ed Paraninfo, 2011.
- B. Marr; Big Data. Using Smart Big Data, Analytics and Metrics to Make Better Decisions and Improve Performance. Ed. Willey, 2015.

Recommended bibliography is given below:

- J. Hernández Alonso, L. López Morán; Estadística Descriptiva. Ediciones Académicas, 2009.
- M. Spiegel, J. Schiller, R. Srinivasan; Probability and Statistics. Ed. Mc Graw-Hill, 2014.
- L. Ruiz-Maya Pérez, J. Martín-Pliego López; Fundamentos de Inferencia Estadística. Ed. Paraninfo, 2005.
- M.A. Gómez Villegas; Inferencia Estadística. Ed. Díaz de Santos, 2013.
- W. Ammermand; The Invisible Brand, Marketing in the Age of Automation, Big Data and Machine Learning. Ed. Willey, 2019.
- R. Glass & S. Callahan; The Big Data-Driven Business. Ed. Willey, 2015
- Gonzalez; Big Data for CEOs and Marketing Directors. Ed. IGD, 2017.

A wide variety of academic articles will be recommended during classes to support this basic bibliography.

10.   EDUCATIONAL GUIDANCE, DIVERTISITY AND INCLUSION UNIT

From the Educational Guidance, Diversity and Inclusion Unit (ODI) we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the student's inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1.   Accompaniment and follow-up by means of counselling and personalized plans for students who need to improve their academic performance.
2.   In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing equal opportunities for all students.

3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:
orientacioneducativa.uev@universidadeuropea.es

11.   ONLINE SURVEYS

Your opinion matters!

The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.

The surveys will be made available in the "surveys" section in virtual campus or via e-mail.

Your assessment is necessary for us to improve.

Thank you very much for your participation.

PLAGIARISM REGULATION

- Plagiarism, either wholly or in part of an intellectual property, will be considered as a serious misconduct.
- The use of fraudulent or illicit means to pass the subject will be reflected in the academic record of the student as a serious fault. This will lead to fail the subject in the corresponding exam period.
- In the case of suspicion of inappropriate use of Artificial Intelligence technologies, the teacher reserves the right to ask the student to defend the activity orally. If the student cannot defend it sufficiently, the activity will be graded with a score of 0.