Universidad Europea

1. BASIC INFORMATION

Course	Statistics for engineering
Degree program	Bachelor's Degree in Industrial Systems Engineering
School	School of Architecture, Engineering, Science and Computing
Year	2
ECTS	6
Credit type	Basic
Language(s)	English
Delivery mode	Face to face
Semester	S1
Academic year	25-26
Coordinating professor	Nuria Benavent

2. PRESENTATION

This subject is a 6 ECTS, second-year foundational course in the Bachelor's Degree in Industrial Systems Engineering. It belongs to the Mathematics module, which consists of the following subjects:

- Algebra
- Calculus I
- Calculus II
- Statistics for Engineering

The overall objective of the course is to equip students with the knowledge, tools, and statistical methods necessary to analyze and solve diverse problems in the field of engineering, such as qualitative and quantitative data analysis or determining the significance of results obtained in a scientific study.

3. LEARNING OUTCOMES

Skills

SK1: Ability to solve mathematical problems that may arise in engineering. Ability to apply knowledge of: linear algebra; geometry; differential geometry; differential and integral calculus; differential and partial differential equations; numerical methods; numerical algorithmics; Statistics and optimization.

- Use descriptive statistics techniques to analyze a dataset
- Calculate probabilities linked to events and random variables
- Operate with distribution functions and density functions
- Perform statistical inferences on problems applied to engineering
- Propose designs of experiments
- Interpret results of experiments

Competences

CP14: Integrate analysis with critical thinking in a process of evaluating different ideas or professional possibilities and their potential for error, based on evidence and objective data that lead to effective and valid decision-making.

4. CONTENT

- Descriptive statistics
- Probability
- Probability density and distribution functions
- Statistical inference
- Design of experiments
- Data analysis

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:
- Master class
- Problem 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
Master classes	10
Practical seminars	20
Problem solving	50
Autonomous study	60
Debates and panel discussions	5
Face-to-face assessment test	5
TOTAL	**150**

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Campus-based mode:

Assessment system	Weight min. %	Weight max.%
Face-to-face assessment test	50	70

Case/problem	20	50
Performance evaluation	5	5

When you access the course on the *Campus Virtual*, you'll find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Campus-based mode:

Assessable activities	Deadline
Group Project First Submission Second Submission	 Weeks 6-7 Week 15
Individual/Collaborative Activities Unit 1 Unit 2 Unit 3 Unit 4 Unit 5	 Week 3 Week 5 Week 7 Week 12 Week 14
Midterm Exam	Weeks 8-9
Final Exam	Weeks 16-17
Group Project Presentation	Week 15

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 main reference work for this subject is:

- Montgomery, D. C., & Runger, G. C. (2018). Applied statistics and probability for engineers (7th ed.). Wiley.
- Stark, H., & Woods, J. W. (2012). Probability, statistics, and random processes for engineers (4th ed.). Pearson.

The recommended Bibliography is:

- Scheaffer, R. L., & Young, L. J. (2010). *Introduction to probability and its applications* (3rd ed.). Cengage Learning.

10.   EDUCATIONAL GUIDANCE, DIVERSITY AND INCLUSION UNIT

From the Educational Guidance, Diversity and Inclusion Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students 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 an 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@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.