1. OVERVIEW

Subject Area	Internet of Things (IoT)
Degree	Bachelor's Degree in Business Analytics
School/Faculty	Social and Communication Sciences
Ac. Year	Third
ECTS	3
Type	Compulsory
Language(s)	Spanish/English
Delivery Mode	On campus
Term	First semester (5th)
Academic Year	2024-2025
Coordinating professor	Jose Antonio Lozano

2. INTRODUCTION

By introducing students to the core principles of this subject, they will be able to learn about environments characterised by their programmable interfaces. As an introductory subject, the module will also cover previous content to enable students to understand the general core principles of computing. The subject will subsequently introduce students to algorithmic thinking so that they are able to adapt to any programming environment. As students will also closely consider the neatness of programming styles, they will subsequently be in a position to produce neat and structured code.

This subject is the first in the Fundamentals of Programming series. It is followed by Fundamentals of Programming II. By the end of this second subject, students will have acquired the skills and knowledge outlined in the course description.

3. SKILLS AND LEARNING OUTCOMES

Key skills (CB, by the acronym in Spanish):

- CB2: Students can apply their knowledge to their work professionally and possess the necessary skills, usually demonstrated by forming and defending opinions, as well as resolving problems within their study area.
- CB3: Students will develop an ability to gather and interpret relevant data (usually within their study area) to form opinions which include reflecting on relevant social, scientific or ethical matters.

Cross-curricular skills (CT, by the acronym in Spanish):

- CT6: Adaptability. Students will be able to accept, consider and integrate different perspectives, adapting their own approach as required by the situation at hand, and to work effectively in ambiguous situations.

Specific skills (CE, by the acronym in Spanish):

- CE17 - Ability to identify technological and innovation-based strategies, as well as the analysis tools and technological capabilities to which a business can resort for the purpose of sustaining growth and development, and boosting competitiveness.
- CE25 - Ability to explore new sources of information and the procedures for applying solutions in view of the situation and the sector in question.

Learning outcomes (RA, by the acronym in Spanish):

- RA1. Ability to analyse and implement solutions and objects known as the Internet of Things in the business field.
- RA2. Develop technologies applied to the IoT, and even use sensors and devices to collect data for the purposes of processing and analysing data
- RA3. Understand, implement and contribute to the design of these technologies in the field of IoT.
- RA4. Understand that IoT enables the organisation to gather data and analyse and process all useful information.

The following table shows how the skills developed in the course match up with the intended learning outcomes:

Skills	Learning outcomes
CB2, CB3, CT06, CE17, CE25	RA1, RA2, RA3, RA4

4. CONTENTS

The subject area is divided into seven topics:

- Topic 1. Introduction to the Internet of Things

Objectives: Introduce the Core Concept of System Interconnection, Definition of IoT and the Description of an Interconnected System.

- Topic 2. IoT Strategies and Solutions
- Topic 3. Structural Analysis of IoT Devices

- Topic 4. IoT-based Business Models
- Topic 5. Smart Cities
- Topic 6. Data Collection, Networks and Communications
- Topic 7. Security and Legal Aspects.
- Topic 8. Data Processing

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Lectures.
- Case studies.

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

Type of learning activity	Number of hours
Lectures	17
Case study analysis	15
Tutorials	5
Independent assignment	25
Asynchronous lecture	6
Debates and discussions	5
Knowledge tests	2
Lectures	17
TOTAL	**75h**

7. ASSESSMENT

The assessment methods, plus their weighting in the final grade for the course, are as follows:

Assessment system	Weighting
Reports and written work	25%
Case study/problem scenario	25%
Presentation of case/problem	10%
In-person tests	40%

On the Virtual Campus, when you open the subject area, you can see all the details of your assessment activities, including the deadlines and assessment procedures for each activity.

7.1. Ordinary exam period

To pass this subject in the ordinary examination period you must….

- Achieve an average grade higher than 5.
- Achieve a grade higher than 5 in the on campus tests.
- Achieve a grade higher than 5 in the case/problem.

7.2. Extraordinary exam period (resits)

To pass this subject in the extraordinary examination period you must….

- Achieve an average grade higher than 5.
- Achieve a grade higher than 5 in the on campus tests.
- Achieve a grade higher than 5 in the case/problem.

8. TIMELINE

The timeline with delivery dates of assessable activities in the subject area is indicated in this section:

Assessable activities	Date
Set of questions on IoT	Week 1-6

Search for IoT projects	Week 7-12
In-depth project analysis	Week 12-14
Written test. Midterm 1 Activity. Preparation for Midterm 1 Activity. Solution for Midterm 1	Week 15-16
Written exam 2 Project. Presentation.	Week 17

The timeline may be subject to modifications for logistical reasons of the activities. Students will be informed of any changes in due time and course.

9. BIBLIOGRAPHY

NP

10. EDUCATIONAL GUIDANCE AND DIVERSITY UNIT

The Educational Guidance and Diversity Unit (ODI in Spanish) offers support throughout your time at university to help you with your academic achievement. Other cornerstones of our educational policy are the inclusion of students with special educational needs, universal access in all our university campuses and equal opportunities.

This ODI unit offers students:

1. Support and monitoring through counselling and personalised student plans for those who need to improve their academic performance.
2. Curricular adaptations to uphold diversity, with assistance for those students who require specific educational support, leading to equal opportunities without significant changes to methodology or evaluation.
3. We offer students a range of extracurricular educational resources to reinforce skills which will enhance their personal and professional development.
4. Career guidance by giving tools and advice to any students who have doubts about their career or think that they have chosen the wrong degree.

Students who need educational support can contact us at:
orientacioneducativa@universidadeuropea.es

11. SATISFACTION SURVEYS

Your opinion matters!

Universidad Europea encourages you to complete our satisfaction surveys to identify strengths and areas for improvement for staff, degree courses and the learning process.

These surveys will be available in the surveys area of your virtual campus or by email.

Your opinion is essential to improve the quality of the degree.

Many thanks for taking part.