1. OVERVIEW OF THE SUBJECT AREA

Subject area	Computer Science Project II
Degree	Bachelor's Degree in Computer Engineering
School/Faculty	Architecture, Engineering and Design
Year	Third
ECTS	6 ECTS
Type	Compulsory
Language(s)	Spanish
Delivery mode	On campus / Online
Semester	Second semester
Year	2022/2023
Coordinating professor	Alberto Hernández Gallardo

2. INTRODUCTION TO THE SUBJECT AREA

This subject area belongs to the Computer Science Project Module, formed by the following subject areas:

- Computer Science Project I
- Computer Science Project II

3. SKILLS AND LEARNING OUTCOMES

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

CB5: Students have developed the learning skills necessary to undertake further study in a much more independent manner.

Transversal skills (CT, by the acronym in Spanish):

CT1: Independent Learning: Ability to choose the most effective strategies, tools and opportunities for independent learning and implementation of what has been learnt.

CT5: Ability to put knowledge into practice, using the skills acquired through the study of mock situations based faithfully on real life issues in the relevant profession.

- CT6: Oral or written communication: Ability to communicate and gather information, ideas, opinions and viewpoints to understand and be able to act, spoken through words or gestures or written through words and/or graphic elements.

- CT7: Awareness of ethical values: Ability to think and act in line with universal principles based on the individual's value, contributing to his/her full development and involving commitment to certain social values.

- CT11: Planning and time management: Ability to set objectives and choose the right means to fulfil them through efficient use of time and resources.

- CT14: Innovation/Creativity: Ability to propose and invent new, original solutions that contribute towards improving problem situations, including ideas from other contexts.

- CT15: Responsibility: Ability to fulfil commitments to themselves and others when undertaking a task and try to meet a range of objectives within the learning process. Ability to face and accept the consequences of actions taken freely.

- CT17: Teamwork: Ability to integrate and collaborate actively with other people, departments and/or organisations in order to reach common goals.

General Skills (CG, by the acronym in Spanish):

- CG1. Ability to conceive, draft, organise, plan, develop and sign projects in the field of computer engineering, with the objective of conceiving, developing and making use of the systems, services and computer applications.
- CG2. Ability to manage project activities in the field of computer science.
- CG3. Ability to design, develop, assess and ensure the accessibility, ergonomics, usability and security of systems, services and computer applications, as well as the information they manage.
- CG4. Ability to define, assess and select hardware and software platforms for the development and implementation of systems, services and computer applications.
- CG10. Knowledge to carry out measurements, calculations, valuations, appraisals, expert's reports, studies, reports, task planning and other similar computer-related work.
- CG11. Ability to analyse and assess the social and environmental impact of technical solutions, understanding the ethical and professional responsibility of the role of a Technical Engineer in Computer Science.

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

- CE25 Ability to possess thorough understanding of the fundamental principles and computational models and know how to apply them to interpret, select, evaluate, model, and create new concepts, theories, uses and technological developments related to computer science.
- CE28 Ability to learn about the fundamentals, paradigms and techniques of intelligent systems and to analyse, design and build systems, services and computer applications that use these techniques in any field of application.
- CE29 Ability to acquire, obtain, formalise and represent human knowledge in a computable form to solve problems through a computer system in any field of application, particularly those related to aspects of computing, perception and performance in intelligent environments.

CE30 Ability to develop and evaluate interactive and complex information presentation systems and how they are used to solve human-computer interaction design problems.

CE31 Ability to understand and develop computational learning techniques and design and implement applications and systems that use them, including those dedicated to automatic information extraction and knowledge from large volumes of data.

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

RA1: Design advanced user interfaces.
RA2: Implement Web applications.
RA3: Develop Web-based apps.
RA4: Use advanced databases.
RA5: Integrate different components to create a complex system.
RA6: Defend the procedures followed and the results obtained orally and/or in writing. RA7: Work in groups and independently to carry out medium-sized projects.
RA8: Responsibly carry out individual tasks in the group work.
RA9: Self-assess the results obtained and the performance provided, taking into account one's abilities and demonstrating self-confidence.

Skills and Learning outcomes	
CE25	RA1, RA2, RA4, RA5, RA7, RA8, RA9
CE28	RA4, RA5, RA7, RA8, RA9
CE29	RA4, RA7, RA8, RA9
CE30	RA7, RA8, RA9
CE31	RA5, RA7, RA8, RA9

4. CONTENTS

The contents of the subject area are as follows:

- Advanced design of user interfaces.
- App development
- Web development
- Use of advanced databases.

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5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- **MD1. Survey on aims and interests.** This survey is used to establish the aims of the subject and gather the student's interests on the subject. We will then make reference to it throughout the year for the students to evaluate the achievement of the aims and interests.

  In the online delivery mode, an initial questionnaire will be carried out with the same objective. Throughout the year, reference will be made to this survey, and a final reflective questionnaire will be carried out for the students to check their learning progress of the subject.

- **MD2. Lectures, subjects of study and seminars.** The "lectures" taught in the on-campus delivery mode are called subjects of study and seminars in the online delivery mode, and are conducted through readings on the topic, technical notes and webinars (which are recorded for students to access).

- **MD4. a) Group research** and/or **b) group problem-solving.** This learning method will be used for the development of both declarative and procedural knowledge. In method type a), a different topic will be assigned to each group to be investigated. Later, new groups will be formed with students who have all studied a different topic, and these new groups will be proposed comprehension and problem-solving activities. In method type b), a series of short questions and problems will be proposed to be solved in groups.

- **MD7. Practical case studies.** These will be used for the development of conditional knowledge. In the online delivery mode, case studies will be used to develop the practical contents of the subject through forums and seminars. This method is also applicable in the classroom for the on-campus modality.

- **MD8. Fieldwork, conferences, visits to companies and institutions.** These will be used for the development of conditional knowledge. In the on campus delivery mode, all these learning methods may be used, while in the online delivery mode, only conferences can be carried out, as they will be available for remote access in real time (via streaming technologies) or recorded and broadcast afterwards.

6. LEARNING ACTIVITIES

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

On campus:

Type of learning activity (AF, by the acronym in Spanish)	Number of hours
AF1: On-campus/online lectures, reading topics and complementary materials, implementation of activities carried out independently and collectively.	25 h
AF2: Integrative group work, consisting of participation in debates and seminars, and group implementation of integrative activities, mainly in the classroom.	50 h
AF3: Independent working	50 h

AF4: Tutorials, academic monitoring and assessment	25 h

Online:

Type of learning activity (AF, by the acronym in Spanish)	Number of hours
AF3: Independent working	50 h
AF6: Reading course material independently and consulting complementary resources. Implementation of individually completed activities	50 h
AF7: Integrative group work	25 h
AF8: Tutorials, academic monitoring and assessment through the Campus Virtual.	25 h

7. ASSESSMENT

The assessable tasks, the assessment criteria for each of them and their weighting with regard to the total subject area grade are set out in the following table.

On campus

Assessment criteria	Weighting (%)
Exams and tests	0-20
Development of reports or design briefs	20-40
Portfolio, peer assessment and/or alternative assessment methods	0-15
Fieldwork, conferences, visits to companies and institutions	0-10
Exercises, case studies, designs, simulations and research	15
Group presentation of the projects carried out in public	20-40

Online

Assessment criteria	Weighting (%)
On-campus knowledge tests	60

Development of reports or design briefs	10-20
Portfolio, peer assessment and/or alternative assessment methods	0-5
Conferences, case studies, designs, simulations and research.	0-5
Basic and general skills corresponding to the subject	5-10
Group presentation of the projects carried out in public.	10-20

On the Campus Virtual, when you open the subject area, you'll find details of your assessable tasks, including the submission dates and assessment procedures for each task.

a. Ordinary exam period

To pass the subject area in the ordinary exam period, you must achieve a final grade of at least 5 out of 10. In order for this to be possible, the following conditions must be met:

In the activities, you must have a grade higher than or equal to the minimum grade indicated as a “pass” in each case (normally 5 out of 10).

To pass a checkpoint, you must achieve a grade higher than or equal to the minimum specified grade in each case (normally 6 out of 10).

The average grade of all the checkpoints must be higher than or equal to the minimum grade specified in each case (normally 6 out of 10). Each checkpoint with a grade below the minimum will count as 1 point towards the final grade of the subject area.

If any of the above points are not met, the maximum grade in the ordinary exam period after applying the percentages will be 4 out of 10.

b. Extraordinary exam period

The extraordinary exam period will be carried out individually. To pass the subject area in the extraordinary exam period, you will need a final grade (weighted average) of at least 5 out of 10 for the subject area.

Activities not passed in the ordinary exam period, or those not submitted, must be repeated after having received the relevant corrections to them by the professor.

If any of the above points are not met, the maximum grade in the extraordinary exam period after applying the percentages will be 4 out of 10.

8. TIMELINE

The timeline with submission dates for the assessable tasks in this subject area will be indicated in this section:

Assessable tasks	Date
Advanced design of user interfaces.	Weeks 1–4
Web development	Weeks 5–9
Use of advanced databases	Weeks 10–13
App development	Weeks 14–17

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

9. BIBLIOGRAPHY

The recommended bibliography is indicated below:

- J. Nielsen, Usability Engineering, publicado por Academic Press (AP Professional), 1993; ISBN: 0- 12-518406-9.

- B. Shneiderman, C. Plaisant, Diseño de Interfaces de Usuario. Pearson AddisonWesley. 2005.

- Tim Brown with Barry Katz. Change by design: How design thinking transforms organizations and inspires innovation. New York: Harper Collins, 2009

- Connolly, T. M., & Begg, C. E. (2005). Sistemas de Bases de Datos. Un enfoque práctico para diseño, implementación y gestión. Pearson.

- Silberschazt, Korth, & Sudarshan. (2006). Fundamentos de Diseño de Bases de Datos. 5o edición. McGraw-Hill Ramakrishnan, R., & Gehrke, J. (2003). Sistemas de Gestión de Bases de Datos. McGraw-Hill.

- Web resources:
  W3C consortium: https://www.w3.org
  w3schools consortium: https://www.w3schools.com
  PHP documentación: http://php.net
  JQuery documentación: https://jquery.com
  Cordova documentación: https://cordova.apache.org/
  Bootstrap documentación: https://getbootstrap.com

10. DIVERSITY AWARENESS UNIT

Students with special educational needs: To ensure equal opportunities, curricular adaptations or adjustments for students with special educational needs will be outlined by the Diversity Awareness Unit (UAD, Spanish acronym).

As an essential requirement, students with special educational needs must obtain a report about the curricular adaptations/adjustments from the Diversity Awareness Unit by contacting unidad.diversidad@universidadeuropea.es at the beginning of each semester.

11. STUDENT SATISFACTION SURVEYS

Your opinion matters!

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

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

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

Many thanks for taking part.