1. OVERVIEW

Subject area	Web and App Development
Degree	Bachelor's Degree in Computer Engineering
School/Faculty	Architecture, Engineering and Design
Year	Third
ECTS	6
Type	Compulsory
Language(s)	Spanish
Delivery mode	On campus / Online
Semester	First
Year	2022-2023
Coordinating professor	Ana del Valle Corrales Paredes

2. INTRODUCTION

Web and App Development is a compulsory subject area within the Bachelor's Degree in Computer Engineering at Universidad Europea de Madrid. After having studied 4 subject areas from the Programming subject in the previous two years of the degree:

- Subject area 1: Foundations of programming
- Subject area 2: Object-Orientated Programming
- Subject area 3: Programming with linear structures
- Subject area 4: Advanced programming techniques

Everything that has been learnt will be used to study the foundations of Web application development, as well as cross-platform hybrid applications (or Apps). In this subject area, the following elements will be studied in detail:

- Web application development (Front-End and Back-End)
- Application development.

3. SKILLS AND LEARNING OUTCOMES

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

- CB2: Students can apply their knowledge to their work or vocation in a professional manner and possess the skills which are usually evident through the forming and defending of opinions and resolving problems within their study area.

- CB4: Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

- 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):

- CT2: Self-confidence: Ability to evaluate one's own results, performance and skills with the self-determination necessary to complete tasks and meet any objectives.
- 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.
- CT8: Information management: Ability to seek, choose, analyse and integrate information from diverse sources.
- CT9: Interpersonal relationship skills: Ability to maintain positive relationships with other people through assertive verbal and non-verbal communication. This means being able to express or communicate what you want, think or feel without discomforting, offending or harming the feelings of other people.
- CT11: Planning and time management: Ability to set objectives and choose the right means to fulfil them through efficient use of time and resources.
- 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.
- CT16: Decision-making: Ability to choose between different options or methods to effectively solve varied situations or problems.
- CT17: Teamwork: Ability to integrate and collaborate actively with other people, departments and/or organisations in order to reach common goals.

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

- CE5. Knowledge of the structure, organisation, operation and interconnection of computer systems, the fundamentals of their programming, and how they are used to solve engineering problems.

- CE17 Knowledge and application of the characteristics, functionalities and structure of Distributed Systems, Computer Networks and the Internet, and to design and implement applications based on them.

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

- RA1: Recognise the peculiarities of client-side web applications (HTML, CSS, JavaScript).

- RA2: Use AJAX.
- RA3: Develop applications with the PHP language and the main available libraries, applying the peculiarities of web applications.
- RA4: Develop code to implement the main user interaction mechanisms in a web application.
- RA5: Design basic web services. RA6: Create a web application.

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

Skills	Learning outcomes
CB2, CB4, CB5, CG8, CT2, CT7, CE5, CE17	RA1
CB2, CB4, CG8, CT8, CT9, CT11, CT15, CT16, CT17, CE5, CE17	RA2
CB4, CG8, CT9, CT11, CT15, CT16, CT17, CE5, CE17	RA3, RA4, RE5, RE6

4. CONTENTS

The subject area will focus on two content areas:

- Web application development
- App development

The content is specified in the following units:

Unit 1. Front-End
- HTML
- CSS
- Adaptive and responsive design
- JavaScript

Unit 2. Back-End
- Introduction to Back-End
- Back-end programming languages
- Databases

Unit 3. Apps and other technologies

- Hybrid applications

5. TEACHING/LEARNING METHODS

The types of teaching/learning methods are as follows:

- Lectures, subjects of study and seminars
- Laboratory work
- Group research and/or group problem-solving
- Designs, understood as practical proposals to solve
- specific problems
- Fieldwork, conferences, visits to companies and institutions

6. LEARNING ACTIVITIES

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

On campus:

Learning activity (AF, by the acronym in Spanish)	Number of hours
Lectures, reading on main topics and complementary materials, implementation of activities carried out independently and collectively (including participation in collaborative learning forums).	50
Integrative group work, consisting of participation in debates and seminars, and group implementation of integrative activities, mainly in the classroom.	25
Independent working	50
Tutorials, academic monitoring and assessment, both in the classroom and on the Campus Virtual.	25
TOTAL	**150**

Online:

Learning activity (AF, by the acronym in Spanish)	Number of hours
Independent working	50
Independent reading on complementary topics and materials and implementation of activities carried out independently. Subsequently, asynchronous group discussion on the Campus Virtual forum, and online seminars with the synchronous e-learning tools on the Campus Virtual.	50
Integrative group work, consisting of participation in debates and seminars, and group implementation of integrative activities. Carried out with the support of the Campus Virtual (the debates are held via forums, the seminars are online).	25

In addition, each group will have asynchronous communication tools to prepare the group work (mainly forums), as well as synchronous communication tools (mainly virtual meeting tools).	
Tutorials, academic monitoring and assessment through the Campus Virtual. Some assessment tests (e.g. exams) will be carried out on-campus when necessary.	25
TOTAL	**150**

7. ASSESSMENT

The assessment systems, plus their weighting in the final grade for the subject area, are as follows:

On campus:

Assessment system	Weighting
Exams and tests	30%
Development of articles, reports or design briefs.	15%-30%
Alternative assessment methods with mind maps, diaries, debates, portfolios, peer assessment, etc.	15%
Fieldwork, conferences, visits to companies and institutions will be evaluated based on the student's participation in a discussion forum.	0 - 10 %
To assess the basic and general skills corresponding to the subject, exercises, problems, case studies, designs, simulations and research will be used.	15%

Online:

Assessment system	Weighting
Knowledge tests, exams and test	60%
Development of articles, reports or design briefs.	10%-20%
Alternative assessment methods with mind maps, diaries, debates, portfolios, peer assessment, etc.	10%-20%
Conferences, participation in discussion forums	0%-5%
To assess the basic and general skills corresponding to the subject, exercises, problems, case studies, designs, simulations and research will be used.	10%-20%

On the Campus Virtual, when you open the subject area, you will find all the details of your assessable tasks and the deadlines and assessment procedures for each task.

7.1. Ordinary exam period

To pass the subject area in the ordinary exam period, you will need a final grade of at least 5.0 out of 10.0 (weighted average) for the subject area.

The weighted average will be used provided that:

- You must achieve a grade of at least 5 in the knowledge tests (average).
- You must achieve a grade of at least 5 in the case study/problem scenario or project.
- You must achieve a grade of at least 5 in the average of the activities/laboratories.

7.2. Extraordinary exam period (resits)

To pass the subject area in the extraordinary exam period, you will need a final grade of at least 5.0 out of 10.0 (weighted average) for the subject area.

The weighted average will be used provided that:

- You must achieve a grade of at least 5 in the on-campus knowledge tests (average).
- You must achieve a grade of at least 5 in the case study/problem scenario.
- You must achieve a grade of at least 5 in the average of the activities/laboratories.
- Activities not passed in the ordinary exam period, or those not submitted, must be submitted after receiving the relevant corrections and feedback from the lecturer.

8. TIMELINE

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

Assessable tasks	Date
Activity 0. Diagnostic evaluation	Weeks 1–2
Activity 1. Simple web	Weeks 2–4
Activity 2. Work on JavaScript libraries	Weeks 5–7
Activity 3. Objective multiple-choice test - interim	Weeks 8–9
Activity 4. PHP login and data handling	Weeks 10–11
Activity 5. Hybrid application	Weeks 12–13
Activity 6. Final project	Weeks 14–17
Activity 7. Final test	Weeks 18–19

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 reference material for the subject area is as follows:

- MERN : guía práctica de aplicaciones web Fontecha, Jesús Gómez,
- Clean JavaScript . Aprende a aplicar código limpio, solid y testing . Software Crafters Miguel A.
- Aprendiendo JavaScript . Aprende las bases del lenguaje web más demandado. Desde cero hasta ECMAScript 6+ Azaustre, Carlos
- JavaScript . The Definitive Guide : Master the World's Most-Used Programming Language
- The recommended bibliography is indicated below:
- 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.