ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

615000967 - Web Development

DEGREE PROGRAMME

61IW - Degree in Software Engineering

ACADEMIC YEAR & SEMESTER

2022/23 - Semester 1

Index

Learning guide

1. Description

1.1. Subject details

Name of the subject	615000967 - Web Development
No of credits	6 ECTS
Type	Optional
Academic year ot the programme	Third year
Semester of tuition	Semester 5
Tuition period	September-January
Tuition languages	English
Degree programme	61IW - Degree in Software Engineering
Centre	61 - Escuela Tecnica Superior De Ingenieria De Sistemas Informaticos
Academic year	2022-23

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Santiago Alonso Villaverde (Subject coordinator)	1125	santiago.alonso@upm.es	Not scheduled.

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Prior knowledge recommended to take the subject

3.1. Recommended (passed) subjects

- Bases De Datos

3.2. Other recommended learning outcomes

- Knowledge about relational databases and SQL

- Software design and programming

- Certain domain about HTML and CSS

4. Skills and learning outcomes *

4.1. Skills to be learned

CC13 - Kowledge and application of the necessary tools for storing, processing and accessing Information Systems, including those based on web.

4.2. Learning outcomes

RA417 - Be able to identify, understand and apply the syntax and semantics of languages for the development of Web applications.

RA418 - Be able to generate graphical user interfaces for Web applications with current development environments.

RA416 - Be able to build solutions based on Web applications with current development environments

RA419 - Be able to build solutions based on Web applications with quality service architectures

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

5. Brief description of the subject and syllabus

5.1. Brief description of the subject

The subject has a marked technological nature, dealing with the design, creation and testing of a complete web system seen from a functional point of view (not graphic or aesthetic design), in such a way that the student who passes it will be able to face, on the one hand, the development necessary to solve the back-end part and, on the other, the front-end or client part.
To do this, some of the techniques and tools currently recommended in these environments will be used, starting with the appropriate versions of ECMAScript or TypeScript and establishing the MEAN development stack with NodeJs for the server part and its programming through Express. Finally, Angular will be seen as a suitable framework for the development of client applications in these environments.

5.2. Syllabus

1. Basic concepts in web development
2. ECMASCRIPT v6
    2.1. Characteristics and syntax of the language
    2.2. Language objects
    2.3. Classes and objects
    2.4. The language in the browser:
        2.4.1. Browser objects
        2.4.2. AJAX
3. NodeJs
    3.1. Basics of HTTP and REST APIs
    3.2. General characteristics
    3.3. Native and external modules
    3.4. Routing: Express
    3.5. Testing
4. Angular

4.1. General characteristics (data binding) and TypeScript

4.2. Components and directives

4.3. Navigation and routes

4.4. Services

4.5. Asynchronous requests

6. Schedule

6.1. Subject schedule*

Week	Classroom activities	Laboratory activities	Distant / On-line	Assessment activities
1	**Basic web concepts** Duration: 02:00 Lecture	**Basic web concepts** Duration: 02:00 Laboratory assignments		
2	**ECMASCRIPT v6** Duration: 02:00 Lecture	**ECMASCRIPT v6** Duration: 02:00 Laboratory assignments		
3	**ECMASCRIPT v6** Duration: 02:00 Lecture	**ECMASCRIPT v6** Duration: 02:00 Laboratory assignments		
4	**ECMASCRIPT v6** Duration: 02:00 Lecture	**ECMASCRIPT v6** Duration: 02:00 Laboratory assignments		
5	**ECMASCRIPT v6** Duration: 02:00 Lecture	**ECMASCRIPT v6** Duration: 02:00 Laboratory assignments		
6	**NodeJs** Duration: 02:00 Lecture	**NodeJs** Duration: 02:00 Laboratory assignments		
7	**NodeJs** Duration: 02:00 Lecture	**NodeJs** Duration: 02:00 Laboratory assignments		
8	**NodeJs** Duration: 02:00 Lecture	**NodeJs** Duration: 02:00 Laboratory assignments		**First practical work. Front-End develpment with ECMASCRIPT (RA416, RA417, RA418, RA419)** Online test Continuous assessment Not Presential Duration: 00:00
9	**Angular** Duration: 02:00 Lecture	**Angular** Duration: 02:00 Laboratory assignments		
10	**Angular** Duration: 02:00 Lecture	**Angular** Duration: 02:00 Laboratory assignments		
11	**Angular** Duration: 02:00 Lecture	**Angular** Duration: 02:00 Laboratory assignments		
12	**Angular** Duration: 02:00 Lecture	**Angular** Duration: 02:00 Laboratory assignments		

13	**Angular** Duration: 02:00 Lecture	**Angular** Duration: 02:00 Laboratory assignments		
14		**Angular. - Practical Work** Duration: 04:00 Laboratory assignments		
15		**Practical work** Duration: 04:00 Laboratory assignments		**Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419)** Online test Continuous assessment Not Presential Duration: 00:00
16				
17				**First practical work. Front-End develpment with ECMASCRIPT (RA416, RA417, RA418, RA419)** Online test Final examination Not Presential Duration: 00:00 **Second practical work. Back - end with Node and front-end with Angula.(RA416, RA417, RA418, RA419)** Online test Final examination Not Presential Duration: 00:00 **Practical exam.(RA416, RA417, RA418, RA419)** Problem-solving test Continuous assessment and final examination Presential Duration: 02:00

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The schedule is based on an a priori planning of the subject; it might be modified during the academic year, especially considering the COVID19 evolution.

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
8	First practical work. Front-End develpment with ECMASCRIPT (RA416, RA417, RA418, RA419)	Online test	No Presential	00:00	20%	3 / 10	CC13
15	Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419)	Online test	No Presential	00:00	60%	3 / 10	CC13
17	Practical exam.(RA416, RA417, RA418, RA419)	Problem-solving test	Face-to-face	02:00	20%	4 / 10	CC13

7.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	First practical work. Front-End develpment with ECMASCRIPT (RA416, RA417, RA418, RA419)	Online test	No Presential	00:00	20%	5 / 10	CC13
17	Second practical work. Back - end with Node and front-end with Angula.(RA416, RA417, RA418, RA419)	Online test	No Presential	00:00	60%	5 / 10	CC13
17	Practical exam.(RA416, RA417, RA418, RA419)	Problem-solving test	Face-to-face	02:00	20%	4 / 10	CC13

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
First practical work. Front-End develpment with ECMASCRIPT (RA416, RA417, RA418, RA419)	Online test	Face-to-face	00:00	20%	5 / 10	CC13

Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419)	Online test	Face-to-face	00:00	60%	5 / 10	CC13
Practical exam (RA416, RA417, RA418, RA419)	Problem-solving test	Face-to-face	02:00	20%	5 / 10	CC13

7.2. Assessment criteria

Progressive evaluation - To pass the course, the student must do first (1PW) and second practical work (2PW) and get, at least, a 3 over 10 points and do the practical exam (PE - 17th week), obtaining, at least, a 4 over 10 points.

Final grade, will be: Final grade = 1PW * 0.2 + 2PW *0.6 + PE*0.2

This final grade should be at least 5 over 10 to pass the course

If the student does not get a grade at least 3 over 10 (4 over 10 in PE) in any work, he/she will be able to present those failed works again just before he/she does the practical exam (17th week), having then, to get at least a 5 over 10 points.

Referred (re-sit) examination -

To pass the course doing the this call for exam, the student must do first (1PW) and second practical work (2PW) and get, at least, 5 points out of 10 in each, and do the practical exam (PE - 17th week), obtaining, at least, a 4 over 10 points.

Final grade, will be: Final grade = 1PW * 0.2 + 2PW *0.6 + PE*0.2

This final grade should be at least 5 over 10 to pass the course

If the student does not get the minimum grade in any of the evaluation activities he/she will fail the course and his/her final grade will be the minimum of the grades of the different activities done.

ATTENTION:

- If any type of fraud is detected in any of the evaluation activities, the student/s will get a zero as final grade in the

current convocatory and the teacher may propose a special and equivalent exam in the next call for exam.

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Moodle UPM	Web resource	The whole pack of documentation and examples used in class by the teacher. It is documentation elaborated by the teacher
JavaScript : the definitive guide, Flanagan, David, O'Reilly 2011	Bibliography	Advanced bibliography about ECMASCRIPT
JavaScript patterns, Stefanov, Stoyan, O'Reilly 2010	Bibliography	patterns and programming with javascript
http://www.w3.org	Web resource	W3C consortium Web
https://angular.io/	Web resource	Official web for Angular
https://nodejs.org	Web resource	Official web for Nodejs
Computer	Equipment	At least one computer per each student to do the practical work in class

9. Other information

9.1. Other information about the subject