

COORDINATION PROCESS OF LEARNING ACTIVITIES PR/CL/001



E.T.S. de Ingenieria de Sistemas Informaticos



SUBJECT

615001063 - Web Development

DEGREE PROGRAMME

61IW - Grado En Ingenieria Del Software

ACADEMIC YEAR & SEMESTER

2023/24 - Semester 1





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1. Description

1.1. Subject details

Name of the subject	615001063 - Web Development
No of credits	6 ECTS
Туре	Optional
Academic year ot the programme	Third year
Semester of tuition	Semester 5
Tuition period	September-January
Tuition languages	English
Degree programme	61IW - Grado en Ingenieria del Software
Centre	61 - Escuela Tecnica Superior De Ingenieria De Sistemas Informaticos
Academic year	2023-24

2. Faculty

2.1. Faculty members with subject teaching role

	emaii	Tutoring hours *
Santiago Alonso Villaverde (Subject coordinator)	santiago.alonso@upm.es	Sin horario. Check at https://tutor.etsisi.up m.es with the possibility of booking through the platform

* 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

- Software design and programming
- Certain domain about HTML and CSS
- Knowledge about relational databases and SQL

4. Skills and learning outcomes *

4.1. Skills to be learned

CC13 - Conocimiento y aplicación de las herramientas necesarias para el almacenamiento, procesamiento y acceso a los Sistemas de información, incluidos los basados en web.

4.2. Learning outcomes

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

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

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

* 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.

ATTENTION: It is important that the student should have knowledge about the use of HTML and CSS previously to do this course

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. General characteristics
- 3.2. Native and external modules
- 3.3. Routing: Express
- 3.4. 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
	Basic web concepts	Basic web concepts		
1	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	ECMASCRIPT v6	ECMASCRIPT v6		
2	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	ECMASCRIPT v6	ECMASCRIPT v6		
3	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	ECMASCRIPT v6	ECMASCRIPT v6		
4	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	ECMASCRIPT v6	ECMASCRIPT v6		
5	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	NodeJs	NodeJs		
6	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	NodeJs	NodeJs		
7	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	NodeJs	NodeJs		First practical work. Front-End
	Duration: 02:00	Duration: 02:00		develpment with ECMASCRIPT (RA416,
	Lecture	Laboratory assignments		RA417, RA418, RA419)
8				Online test
				Continuous assessment
				Not Presential
				Duration: 00:00
	Angular	Angular		
9	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	Angular	Angular		
10	Duration: 02:00	Duration: 02:00		
	Lecture	Lecture		
	Angular	Angular		
11	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments		
	Angular	Angular		
12	Duration: 02:00	Duration: 02:00		
	Lecture	Laboratory assignments	<u> </u>	





13 Duration: 02:00 Lecture Duration: 02:00 Laboratory assignments Angular - Practical Work Duration: 04:00 Laboratory assignments 14 Angular - 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 Image: Continuous assessment Not Presential Duration: 00:00 16 Image: Continuous assessment Not Presential Duration: 00:00 17 Image: Continuous assessment Not Presential Duration: 00:00		Angular	Angular	
Lecture Laboratory assignments Image: Constraint of the second practical work ask - end with noute of the second practical work. Back - end with note of the second practical work. Bac	13	Duration: 02:00	Duration: 02:00	
14 Angular - Practical Work Augurar - Practical Work 14 Duration: 04:00 Second practical work. Back - end with 15 Practical Work Duration: 04:00 15 Laboratory assignments Second practical work. Back - end with 16 Image: Continuous assessment in the Continuous asses		Lecture	Laboratory assignments	
14 Duration: 04:00 Laboratory assignments Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) 15 Practical Work Duration: 04:00 Laboratory assignments RA417, RA418, RA419) 16 Image: Continuous assessment Not Presential Duration: 00:00 16 Image: Continuous assessment Not Presential Duration: 00:00 16 Image: Continuous assessment Not Presential Duration: 00:00 17 Image: Continuous assessment Not Presential Duration: 00:00 17 Image: Continuous assessment Not Presential Duration: 00:00				
14 Duration: 04:00 Laboratory assignments Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) 15 Duration: 04:00 Laboratory assignments RA417, RA418, RA419) 15 Online test Continuous assessment Not Presential Duration: 00:00 Online test Continuous assessment Not Presential Duration: 00:00 16 Image: Continuous assessment Not Presential Duration: 00:00 Image: Continuous assessment Not Presential Duration: 00:00 16 Image: Continuous assessment Not Presential Duration: 00:00 Image: Continuous assessment Not Presential Duration: 00:00 17 Image: Continuous assessment Not Presential Duration: 00:00 Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) 17 Image: Continuous assessment Not Presential Image: Continuous assessment Not Presential			Angular - Practical Work	
15 Practical Work Second practical work. Back - end with Angular.(RA416, RA417, RA418, RA419) 15 Online test Continuous assessment 16 Mode and front-end with Angular.(RA416, RA419) 18 First practical work. Front-End development with ECMASCRIPT (RA416, RA417, RA418, RA419) 16 Mode and front-end with Angular.(RA416, RA417, RA418, RA419) 17 Image: Mode and front-end with Angular.(RA416, RA417, RA418, RA419) 17 Online test	14		Duration: 04:00	
15 Practical Work Second practical work. Back - end with 15 Duration: 04:00 Node and front-end with Angular.(RA416, 15 Continuous assessments Online test 16 Continuous assessment Not Presential Duration: 04:00 Duration: 00:00 Duration: 00:00 16 Image: Continuous assessment Not Presential Duration: 00:00 Duration: 00:00 First practical work. Front-End development with ECMASCRIPT (RA416, RA417, RA418, RA419) Online test Image: Continuous assessment with ECMASCRIPT (RA416, RA417, RA418, RA419) Online test Image: Continuous assessment with ECMASCRIPT (RA416, RA417, RA418, RA419) Online test Image: Continuous assessment with ECMASCRIPT (RA416, RA417, RA418, RA419) Online test Image: Continuous assessment with ECMASCRIPT (RA416, RA417, RA418, RA419) Online test Image: Continuous assessment with Angular.(RA416, RA417, RA418, RA419) Online test Image: Continuous assessment with Angular.(RA416, RA417, RA418, RA419) Online test Image: Continuous assessment with Angular.(RA416, Node and front-end with Angular.(RA416, Image: Continuous assest with Node and front-end			Laboratory assignments	
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15 Laboratory assignments RA417, RA418, RA419) 15 Online test Continuous assessment Not Presential Duration: 00:00 16 Image: Continuous assessment 17 Image: Continuous assessment 17 Image: Continuous assessment 17 Image: Continuous assessment 18 Image: Continuous assessment 19 Image: Continuous assessment 10 Image: Continuous assessment 11 Image: Continuous assessment 12 Image: Continuous assessment 13 Image: Continuous assessment 14 Image: Continuous assessment 15 Image: Continuous assessment 16 Image: Continuous assessment 17 Image: Continuous assessment 15 Image: Continuous assessment 15 Image: Continuous assessment 15 Image: Continuous assessment 16 Image: Continuous assessment 17 Image: Continuous assessment			Duration: 04:00	Node and front-end with Angular.(RA416,
15 Online test Continuous assessment Not Presential Duration: 00:00 16 17 Image: Continuous assessment Not Presential Duration: 00:00 17 Image: Continuous assessment Duration: 00:00			Laboratory assignments	RA417, RA418, RA419)
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16 Not Presential Duration: 00:00 16 Image: Comparison of the				Continuous assessment
Image: constraint of the second sec				Not Presential
16 Image: Constraint of the sector of th				Duration: 00:00
10 Image: Constraint of the second practical work of the	16			
17 Instruction work. Frontecting development 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 Angular.(RA416, RA417, RA418, RA419) Online test				 First practical work Front-End
17 Contraction Contraction Contraction				development with ECMASCRIPT (PA416
17 Image: Constraint of the constraint				
17 Online test Online test Final examination Not Presential Duration: 00:00 Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) Online test				RA417, RA410, RA419)
17 Intervention Pinal examination Not Presential Duration: 00:00 Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) Online test				
17 Not Presential Duration: 00:00 Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) Online test				
17 Duration: 00:00 Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) Online test				Not Presential
17 Second practical work. Back - end with Node and front-end with Angular.(RA416, RA417, RA418, RA419) Online test				Duration: 00:00
Node and front-end with Angular.(RA416, RA417, RA418, RA419) Online test				Second practical work. Back - end with
17 Online test				Node and front-end with Angular.(RA416,
17 Online test				RA417, RA418, RA419)
	17			Online test
Final examination				Final examination
Not Presential				Not Presential
Duration: 00:00				Duration: 00:00
Practical exam.(RA416, RA417, RA418,				Practical exam.(RA416, RA417, RA418,
RA419)				RA419)
Problem-solving test				Problem-solving test
Continuous assessment and final				Continuous assessment and final
examination			1	examination
Presential			1	Presential
Duration: 02:00				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	Туре	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%	5/10	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%	5/10	CC13
17	Practical exam.(RA416, RA417, RA418, RA419)	Problem- solving test	Face-to-face	02:00	20%	5/10	CC13

7.1.2. Global examination

Week	Description	Modality	Туре	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 Angular.(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%	5/10	CC13

7.1.3. Referred (re-sit) examination

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



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	03:00	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 5 over 10 points and do the practical exam (PE - 17th week), obtaining, at least, a 5 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 5 over 10 in any evaluation task, he/she will be able to present those failed works again just before he/she does the practical exam (17th week).

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 5 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.

- The teacher may ask any student at any time to present and/or defend any of the evaluation activities throughout the course. If said presentation/defense is not carried out satisfactorily, the student will fail the subject with the grade obtained in said defense.



8. Teaching resources

8.1. Teaching resources for the subject

Name	Туре	Notes		
		The whole pack of documentation and		
Moodle UPM	Web resource	examples used in class by the teacher. 		
		It is documentation elaborated by the teacher		
JavaScript : the definitive guide,	Piblicgrophy			
Flanagan, David, O'Reilly 2011	ыыюдгарту	Advanced bibliography about ECMASCRIPT		
JavaScript patterns, Stefanov,	Piblicgrophy	patterns and programming with javascript		
Stoyan, O'Reilly 2010	ыыюдгарту			
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	Equipmont	At least one computer per each student to do		
	Ечиртен	the practical work in class		