VNIVERSITAT DE VALÈNCIA

Course Guide
44826 Distributed Component-Based and Service-Based Development

COURSE DATA

DATA SUBJECT

Code: 44826
Name: Distributed Component-Based and Service-Based Development
Cycle: Master's Degree
ECTS Credits: 4
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
2234 - Master's Degree in Web Technology, Cloud Computing and Mobile Applications	Escola Tècnica Superior d'Enginyeria	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2234 - Master's Degree in Web Technology, Cloud Computing and Mobile Applications	Server-Side Development	COMPULSORY

COORDINATION

GRIMALDO MORENO FRANCISCO

SUMMARY

This course will introduce the student to the paradigm of web application development based on the integration of distributed components and services. This approach, which places special emphasis on code reuse, seeks to define and implement web systems as a result of the aggregation of independent and loosely coupled components, which allows to accelerate and optimize software development processes. To do this, an overview of the main component-oriented development platforms and frameworks in the web environment, the available technologies and their fields of application will be given.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

To successfully complete this course, it is recommended that students know the basic technologies for the development of web applications, both from the client and from the server side.

COMPETENCES / LEARNING OUTCOMES

2234 - Master's Degree in Web Technology, Cloud Computing and Mobile Applications

Ability to apply acquired knowledge and solve problems in new or little-known environments within broader and multidisciplinary contexts, being able to integrate this knowledge.

Ability to design, develop and maintain Web applications using technologies and frameworks both in the client and in the server sides.

Ability to design and evaluate servers, applications and systems based on distributed computing.

Ability to model, design, define the architecture, implement, manage, operate, and maintain applications, systems, services, networks and content in the field of Web technologies, cloud computing and mobile applications.

Ability to understand and apply the operation and organization of component models, intermediary software and services.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

Students should demonstrate self-directed learning skills for continued academic growth.

Students should possess and understand foundational knowledge that enables original thinking and research in the field.

To foster, in academic and professional contexts, technological, social or cultural advancement within a society based on In knowledge and respect for: a) fundamental rights and equal opportunities between men and women; b) principles of equal opportunities and universal accessibility of persons with disabilities; and, c) the values of a culture of peace and democratic values.

DESCRIPTION OF CONTENTS

1. Developing applications with the Spring framework + Spring Boot

2. Developing Web applications with Spring MVC + Spring Test

3. Developing REST APIs with Spring + Spring HATEOAS

4. Securing REST APIs with Spring Security

5. Development of message driven applications with JMS and Spring AMQP

6. Reactive programming with Spring WebFlux

7. Developing microservice oriented architectures in Spring Cloud

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theoretical and practical classes	28,90
Laboratory	11,10
Total hours	**40,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	9,00
Independent study and work	35,00
Preparation of lessons	16,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**60,00**

TEACHING METHODOLOGY

- Theory class
- Problem resolution
- Project-oriented learning

EVALUATION

The assesment modalities used in this subject are:

SE1: Assessment of the degree of participation

SE2: Assessment of problems, works, reports and/or memories

SE4: Exam or face-to-face assessment

SE6: Assessment of laboratory

- First call:

Final grade = 0,1*SE1 + 0,3*SE2 + 0,2*SE4 + 0,4*SE6

- Second call:

All the works (SE2 and SE6) not passed in the first call can be submitted. SE1 is not recoverable

Final grade = 0,1*SE1 + 0,3*SE2 + 0,2*SE4 + 0,4*SE6

SE2 and SE4 will be jointly assessed through the completion and in-person defense of a final project. It will be necessary to pass this part in order to calculate the average.

The submission of code or reports largely generated by automated tools will be considered plagiarism, and the appropriate disciplinary procedures outlined in the PROTOCOL FOR ACTION AGAINST FRAUDULENT PRACTICES AT THE UNIVERSITY OF VALENCIA (ACGUV 123/2020) may be applied.

The grading system is specified at the following link: http://www.uv.es/uvweb/universidad/es/estudios-postgrado/informacion-administrativapostgrado/permanencia-calificaciones/calificaciones-1285897761928.html

The applicable regulations can be found at the following link: http://www.uv.es/uvweb/universidad/es/estudios-grado/informacion-academicaadministrativa/normativas/normativas-universidad-valencia-1285850677111.html

REFERENCES

- Spring Framework Official site. http://www.spring.io
- Pro Spring 5: An In-Depth Guide to the Spring Framework and Its Tools. Iuliana Cosmina, Rob Harrop, Chris Schaefer, Clarence Ho (https://trobes.uv.es/permalink/34CVA_UV/1093lvl/cdi_askewsholts_vlebooks_9781484228081)
- Beginning Spring Boot 3: Build Dynamic Cloud-Native Java Applications and Microservices. K. Siva Prasad Reddy (https://trobes.uv.es/permalink/34CVA_UV/um6gse/alma991009954635006258)
- Pro Spring Boot 2 An Authoritative Guide to Building Microservices, Web and Enterprise Applications, and Best Practices. Gutierrez, Felipe. Apress. (https://trobes.uv.es/permalink/34CVA_UV/1093lvl/cdi_askewsholts_vlebooks_9781484236765)
- Spring 6 Recipes: A Problem-Solution Approach to Spring Framework. Marten Deinum, Daniel Rubio, Josh Long (https://trobes.uv.es/permalink/34CVA_UV/um6gse/alma991010215289506258)
- Learning Spring Boot 3. 0: Simplify the Development of Production-Grade Applications Using Java and Spring. Greg L. Turnquist, Dave Syer, Mark Heckler, Josh Long (https://trobes.uv.es/permalink/34CVA_UV/1093lvl/cdi_proquest_ebookcentral_EBC30302623)