COURSE DATA

DATA SUBJECT

Code: 44822
Name: Data Centres and Virtualisation
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	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2234 - Master's Degree in Web Technology, Cloud Computing and Mobile Applications	Infrastructure and Infrastructure Management	COMPULSORY

COORDINATION

CLAVER IBORRA JOSE MANUEL

SUMMARY

Data centers are facilities to host servers and storage systems, interconnected by a high performance network infrastructure. The flexibility introduced by virtualization allows increasing the performance of these data centers. In this course, we analyze the trends, architectures as well as used techniques in their design, analysis and management under the point of view of virtualization.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

The same required to access the master.

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 and evaluate servers, applications and systems based on distributed computing.

Ability to know the architecture, deploy and manage virtualization-based infrastructures and deploy applications in them.

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.

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. Data centers

2. High availability and clustering

3. Virtualization of resources, components and services

4. Software Defined Networks

5. Network Function Virtualization

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	6,00
Independent study and work	35,00
Preparation of lessons	16,00
Preparation for assessment activities	3,00
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: Online assessment and/or degree of participation

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

SE4: Exam or face-to-face assessment

SE6: Assessment of laboratory

Evaluation SE1 (10%)

Based on participation and degree of involvement in the teaching-learning, taking into account regular attendance to the planned activities

Evaluation SE2 (20%)

10% report / presentation of an advanced topic of the subject or presented by specialists.

10% problems and exercises

Evaluation SE4 (30%):

30% Final written exam. A minimum score of 40% is required.

Evaluation SE6 (40%)

20% reports of the practical activities, answering questions of the statement itself. A minimum score of 40% is required.

20% short questions from laboratories. A minimum of 40% of these short questions is required.

Note: In the case of 2nd call, the exam of the Theory Part counts 30%, corresponding to the partial and final of the 1st call, and a minimum grade of 40% is also required. The continuous evaluation activities will not be recoverable in the second call.

The grading system is specified at the following link:

http://www.uv.es/uvweb/universidad/es/estudios-postgrado/informacion-administrativa-

postgrado/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-academica-administrativa/normativas/normativas-universidad-valencia-1285850677111.html

REFERENCES

- Cloud Data Centers and Cost Modeling, Rajkumar Buyya; Caesar Wu
- Data Center Networks - Topologies, Architectures and Fault-Tolerance Characteristics, Liu, Y., Muppala, J.K., Veeraraghavan, M., Lin, D., Hamdi, M., Springer, 2013
- Cloud Networking: Understanding Cloud-based Data Center Networks, Gary Lee
- Analysis of TCP Performance in Data Center Networks, Kulkarni, Santosh, Agrawal, Prathima, Springer, 2014.