

**1. General information****Course:** NETWORK INFRASTRUCTURE DESIGN**Code:** 42337**Type:** ELECTIVE**ECTS credits:** 6**Degree:** 407 - DEGREE PROGRAMME IN COMPUTER SCIENCE ENGINEERING**Academic year:** 2023-24**Center:** 108 - SCHOOL OF COMPUTER SCIENCE OF C. REAL**Group(s):** 20**Year:** 3**Duration:** C2**Main language:** Spanish**Second language:** English**Use of additional languages:****English Friendly:** Y**Web site:****Bilingual:** N**Lecturer:** MARIA SOLEDAD ESCOLAR DIAZ - Group(s): 20

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2. Pre-Requisites

Basic TCP/IP Network , programming and theory experience.

3. Justification in the curriculum, relation to other subjects and to the profession

In this course you will learn the principles of network design. We will deeply study advanced networks usually found on datacenters such as Infiniband.

4. Degree competences achieved in this course**Course competences**

Code	Description
IC08	Ability to design, develop, manage, and administrate computer networks.
INS01	Analysis, synthesis, and assessment skills.
INS02	Organising and planning skills.
INS05	Argumentative skills to logically justify and explain decisions and opinions.
PER02	Ability to work in multidisciplinary teams.
PER04	Interpersonal relationship skills.
PER05	Acknowledgement of human diversity, equal rights, and cultural variety.
SIS01	Critical thinking.
SIS03	Autonomous learning.
SIS04	Adaptation to new scenarios.
SIS05	Creativity.

5. Objectives or Learning Outcomes**Course learning outcomes****Description**

Ability to configure and manage the parameters related to the quality of service of a computer network
Ability to apply the rules of structured network cabling.
Ability to plan and size a SAN, LAN, MAN and WAN network.
Ability to identify the requirements necessary for the design of a network.

6. Units / Contents**Unit 1: Review of basic concepts****Unit 2: Wired network infrastructure design****Unit 3: Wireless network infrastructure design****Unit 4: Cloud infrastructure design****Unit 5: Data Centers****7. Activities, Units/Modules and Methodology**

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	IC08	0.6	15	N	-	Teaching of the subject matter by lecturer
Individual tutoring sessions [ON-SITE]		IC08	0.18	4.5	N	-	Individual or small group tutoring in lecturer's office, classroom or

Study and Exam Preparation [OFF-SITE]	Self-study	IC08	1.8	45	N		laboratory - Self-study
Other off-site activity [OFF-SITE]	Practical or hands-on activities	IC08 INS01 INS02 INS04 INS05 PER02 PER04 PER05 SIS05	0.9	22.5	N		- Lab practical preparation
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	IC08 INS04 INS05 PER02 PER04 PER05 SIS01	0.6	15	Y	N	Worked example problems and cases resolution by the lecturer and the students
Writing of reports or projects [OFF-SITE]	Self-study	IC08 INS01 INS02 INS04 INS05 PER02 PER04 PER05 SIS01 SIS03 SIS04 SIS05	0.9	22.5	Y	N	Preparation of essays on topics proposed by lecturer
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	IC08 INS04 INS05 PER02 PER04 PER05	0.72	18	Y	Y	Realization of practicals in laboratory /computing room
Final test [ON-SITE]	Assessment tests	IC08 INS01 INS05 PER02 SIS05	0.3	7.5	Y	Y	
Total:			6	150			
Total credits of in-class work: 2.4			Total class time hours: 60				
Total credits of out of class work: 3.6			Total hours of out of class work: 90				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Theoretical papers assessment	15.00%	15.00%	Non-compulsory activity that can be retaken. To be carried out before end of teaching period
Laboratory sessions	25.00%	25.00%	Compulsory activity that can be retaken. To be carried out during lab sessions
Oral presentations assessment	10.00%	10.00%	Non-compulsory activity that can be retaken. To be carried out during the theory/lab sessions for students in the continuous assessment modality. The students of non-continuous modality will be evaluated of this activity through an alternative system in the final exam call (convocatoria ordinaria).
Final test	50.00%	50.00%	Compulsory activity that can be retaken (rescheduling) to be carried out within the planned exam dates of the final exam call (convocatoria ordinaria).
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

In compulsory activities, a minimum mark of 40% is required in order to pass that activity and have the possibility to therefore pass the entire subject. A compulsory activity cannot be divided into eliminatory parts, nor can minimum marks be established for each of its parts. In the case of the activities that may be retaken (i.e., rescheduling), an alternative activity or test will be offered in the resit/retake exam call (convocatoria extraordinaria).

The final exam will be common for all the theory/laboratory groups of the subject and will be evaluated by the lecturers of the subject in a serial way, i.e., each part of the final exam will be evaluated by the same lecturer for all the students.

A student is considered to pass the subject if she/he obtains a minimum of 50 points out of 100, taking into account the points obtained in all the evaluable activities, and also has passed all the compulsory activities.

For students who do not pass the subject in the final exam call (convocatoria ordinaria), the marks of activities already passed will be conserved for the resit/retake examcall (convocatoria extraordinaria). If an activity is not recoverable, its assessment will be preserved for the resit/retake exam call (convocatoria extraordinaria) even if it has not been passed. In the case of the passed recoverable activities, the student will have the opportunity to receive an alternative evaluation of those activities in the resit/retake exam call and, in that case, the final grade of the activity will correspond to the higher grade obtained.

The mark of the passed activities in any call, except for the final exam, will be conserved for the subsequent academic year at the request of the student, provided that mark is equal or greater than 50% and that the activities and evaluation criteria of the subject remain unchanged prior to the beginning of that academic year.

The failure of a student to attend the final exam will automatically result in her/him receiving a "Failure to attend" (no presentado). If the student has not passed any compulsory evaluation activity, the maximum final grade will be 40%.

Non-continuous evaluation:

Students may apply at the beginning of the semester for the non-continuous assessment mode. In the same way, the student may change to the non-continuous evaluation mode as long as she/he has not participated during the teaching period in evaluable activities that together account for at least 50% of the total mark of the subject. If a student has reached this 50% of the total obtainable mark or the teaching period is over, she/he will be considered in continuous assessment without the possibility of changing to non-continuous evaluation mode.

Students who take the non-continuous evaluation mode will be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences), through the assessment systems indicated in the column "Non-continuous evaluation".

In the "non-continuous evaluation" mode, it is not compulsory to keep the mark obtained by the student in the activities or tests (progress test or partial test) taken in the continuous assessment mode.

Specifications for the resit/retake exam:

Evaluation tests will be conducted for all recoverable activities.

The failure of a student to attend the final exam will automatically result in her/him receiving a "Failure to attend" (no presentado), except in the case that the student conserves the mark for the final exam from the final exam call (convocatoria ordinaria). In the latter case, the student's carrying out of any other evaluable activity in the resit/retake exam call (convocatoria extraordinaria) will result in a numerical mark.

Specifications for the second resit / retake exam:

Same characteristics as the resit/retake exam call.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
General comments about the planning: The subject is taught in 3 x 1,5 hour sessions per week.	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Forouzan, Behrouz A.	Transmisión de datos y redes de comunicaciones	McGraw-Hill		978-84-481-5617-6	2007	
Huidobro, J.M.	Telecomunicaciones. Tecnologías, Redes y Servicios	RAMA		978-84-9964-015-0	2010	
Stallings, William	Comunicaciones y redes de computadores	Prentice Hall		978-84-205-4110-5	2008	
Rajkumar Buyya, Christian	Mastering Cloud Computing: Foundations and Applications				2013	
Priscilla Oppenheimer	Top-Down Network Design. Third Edition	Cisco Systems		1-58720-283-2	2011	http://www.teraits.com/pitagoras/marcio/gpi/b_POppenheimer_TopDownNetworkDesign_3rd_ed.pdf
David Hucaby	CCNA Wireless 640-722 Official Cert Guide	Cisco Systems		1-58720-562-9	2014	https://community.cisco.com/legacyfs/online/attachments/discussion/hucaby-d.-ccna-wireless-640-722-official-cert-guide-2014.pdf