UNIVERSIDAD DE CASTILLA - LA MANCHA
GUÍA DOCENTE

1. General information

Course: COMPUTER NETWORKS II
Type: CORE COURSE
Degree: 405 - DEGREE IN COMPUTER SCIENCE ENGINEERING (TA)
Center: 15 - FACULTY OF SOCIAL SCIENCES AND INFORMATION TECHNOLOGIES
Year: 2
Main language: Spanish
Use of additional languages:
Web site:

Code: 42318
ECTS credits: 6
Academic year: 2022-23
Group(s): 60
Duration: C2
Second language:
English Friendly: Y
Bilingual: N

Lecturer: **IVÁN LÓPEZ MONTALBÁN** - Group(s): **60**					
Building/Office	**Department**	**Phone number**	**Email**		**Office hours**
B1.2	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN		Ivan.Lopez@uclm.es		

Lecturer: **JUAN CARLOS MANRIQUE HERNÁNDEZ** - Group(s): **60**					
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por determinar	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN		JuanCarlos.Manrique@uclm.es		

2. Pre-Requisites

This subject is built under the foundations of the competence and knowledge acquired in the following subjects:

- Redes de Computadores I
- Fundamentos de Programación I y II
- Tecnología de Computadores

It is highly recommended to have passed (or being enrolled) the following subjects:

- Sistemas Operativos I
- Programación Concurrente y Tiempo Real

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

This subject is included in the area "Sistemas Operativos, Sistemas Distribuidos y Redes" of the studies plan, and it is the foundation of the following subjects:

- Gestión y Administración de Redes.
- Diseño de Infraestructura de Red.
- Planificación e Integración de Sistema y Servicios.
- Seguridad en Redes.
- Diseño y Gestión de Redes (intensificación de «Tecnologías de la Información»).

The subjects "Computer Networks" I and II provide the student with the basic competencies, knowledge and skills to understand the problems of data communication and the interconnection of networks (especially the Internet). Digital communications today have enormous importance in the entire information technology infrastructure, and also in society, due to its role in the new paradigms of interpersonal communication.

Specifically, the subject "Computer Networks II" is dedicated to deepening the functional aspects of the contents already introduced in the subject "Computer Networks I" in addition to introducing other more advanced concepts such as: dynamic routing protocols, client application programming -server, etc.

4. Degree competences achieved in this course

Course competences

Code	Description
CO05	Knowledge, administration, and maintenance of systems, services and digital systems.
CO08	Ability to analyse, design, build and maintain applications in a strong, safe, and efficient manner by selecting the most appropriate paradigms and programming languages.
CO11	Knowledge and application of the features, functions, and structure of distributed systems, computer networks and the internet, and the design and implementation of application based on them.
INS05	Argumentative skills to logically justify and explain decisions and opinions.
PER04	Interpersonal relationship skills.
UCLM02	Ability to use Information and Communication Technologies.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Knowledge and ability to choose and configure the main routing protocols.

Understanding of the basic concepts of computer networks and protocol architecture.

Knowledge and capacity to choose and use the appropriate network technology for every case study.

Ability to choose, install and configure the most suitable interconnection devices and services according to the user's needs.

Understanding of the usefulness and operation of the transport layer and application of the TCP / IP architecture.

Programming of applications that follow the client / server model in network environments.

Application of basic security mechanisms in systems and networks.

6. Units / Contents

Unit 1: networks application programming
- **Unit 1.1** Sockets interface
- **Unit 1.2** Client UDP/TCP Programming
- **Unit 1.3** Server UDP/TCP Programming

Unit 2: Transport layer protocols
- **Unit 2.1** Reliability and flow control in the transport layer
- **Unit 2.2** Congestion control

Unit 3: Network layer protocols
- **Unit 3.1** IPv6 and associated protocols
- **Unit 3.2** dinamic routing protocols

Unit 4: Advance IP Addressing
- **Unit 4.1** VLSM
- **Unit 4.2** private networks

Unit 5: Link and physical layers
- **Unit 5.1** Ethernet
- **Unit 5.2** Switching
- **Unit 5.3** VLAN

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	CO05 CO08 CO11	0.72	18	N	-	
Individual tutoring sessions [ON-SITE]		CO05 CO08 CO11 UCLM02	0.18	4.5	N	-	
Study and Exam Preparation [OFF-SITE]	Self-study	CO05 CO08 CO11	2.1	52.5	N	-	
Other off-site activity [OFF-SITE]	Practical or hands-on activities	CO05 CO08 CO11 PER04	0.6	15	N	-	
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	CO05 CO08 CO11 INS05 PER04 UCLM02	0.6	15	Y	N	
Writing of reports or projects [OFF-SITE]	Self-study	CO05 CO08 CO11 INS05 PER04	0.9	22.5	Y	Y	
Computer room practice [ON-SITE]	Practical or hands-on activities	CO05 CO08 CO11 INS05 PER04 UCLM02	0.6	15	Y	Y	
Other on-site activities [ON-SITE]	Assessment tests	CO05 CO08 CO11 INS05	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
Oral presentations assessment	10.00%	10.00%	Non-compulsory and non-recoverable activity to be carried out in the theory and / or laboratory sessions.
Final test	50.00%	50.00%	Partial test 1. Compulsory activity and recoverable to be carried out at the end of the first half of the teaching period
Laboratory sessions	30.00%	30.00%	Mandatory and recoverable activity to be performed in laboratory sessions
Projects	10.00%	10.00%	Mandatory and recoverable activity at to be performed in laboratory sessions or theory sessions
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 of 4 out of 10 must be obtained to consider the activity passed and to be able to pass the course. The evaluation of the activities will be global and, therefore, must be expressed by means of a single note. If the activity consists of several sections, it can be assessed individually by informing in writing at the beginning of the course about the assessment criteria for each section. In recoverable activities there is an alternative assessment test in the extraordinary call.

The partial tests will be common for all the theory / laboratory groups of the subject and will be scored by the subject teachers horizontally, that is, each part of the partial tests will be evaluated by the same teacher for all the students. students.

The student passes the course if he obtains a minimum of 50 points out of 100 with the evaluations of each evaluation activity and surpasses all the compulsory activities.

The qualification of the activities passed in any call, except for the separate partial tests, will be kept for the next academic year at the request of the student as long as it is equal to or greater than 50% and the training activities and evaluation criteria are not modified of the subject in the next academic year.

Failure to appear in either of the two partial tests during the final exam will result in the qualification of "Not presented". If the student has not passed any mandatory assessment activity, the final grade in the course cannot exceed 4 out of 10.

Students will only use the virtual campus forums as a means of expressing their doubts or queries of a general nature. They will only go to the teachers' email for individual questions.

Non-continuous evaluation:

Students who cannot regularly attend lessons
can request, at the beginning of the semester, to take advantage of the non-assessment modality
keep going. Similarly, if students who are taking the assessment modality
continues, incurs any circumstance that prevents them from regularly attending lessons, they can take advantage of the non-continuous assessment modality. In this
This case must be notified before the scheduled date for the ordinary call tests,
according to a deadline that will be reported at the beginning of the semester.

Students who take the non-continuous assessment mode will be graded
globally, in 2 annual calls, one ordinary and one extraordinary, evaluating the
100% of the competences, through the evaluation systems indicated in the column
¿Evaluation not continuous¿.

In the "non-continuous" evaluation mode, there is no obligation to keep the grade
obtained by the student in the activities or tests (progress or partial) that have
carried out in a continuous evaluation mode.

In the non-continuous mode, the contents of the activity "Assessment of participation with use in class" will be evaluated by means of a written test on the same day as the official exam.

Specifications for the resit/retake exam:

Evaluation tests will be carried out for all recoverable activities.

For students who do not pass the course in the ordinary call, the grade of the activities passed will be kept for the extraordinary call. In the case of recoverable activities passed, the student may appear for the alternative evaluation of those activities in the extraordinary call and, in that case, the final grade for the activity will correspond to the higher of the two grades obtained.

Specifications for the second resit / retake exam:

Same characteristics as in the extraordinary call.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	**hours**
Writing of reports or projects [AUTÓNOMA][Self-study]	2.5
Writing of reports or projects [AUTÓNOMA][Self-study]	2.5
Unit 1 (de 5): networks application programming	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	9.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	20.5
Writing of reports or projects [AUTÓNOMA][Self-study]	3
Writing of reports or projects [AUTÓNOMA][Self-study]	5
Unit 2 (de 5): Transport layer protocols	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	10
Writing of reports or projects [AUTÓNOMA][Self-study]	4
Writing of reports or projects [AUTÓNOMA][Self-study]	2
Unit 3 (de 5): Network layer protocols	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Study and Exam Preparation [AUTÓNOMA][Self-study]	19
Writing of reports or projects [AUTÓNOMA][Self-study]	3.5

Unit 4 (de 5): Advance IP Addressing	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	8
Study and Exam Preparation [AUTÓNOMA][Self-study]	14
Writing of reports or projects [AUTÓNOMA][Self-study]	3.5
Unit 5 (de 5): Link and physical layers	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	10
Study and Exam Preparation [AUTÓNOMA][Self-study]	14
Writing of reports or projects [AUTÓNOMA][Self-study]	3
Writing of reports or projects [AUTÓNOMA][Self-study]	3.5
Global activity	
Activities	**hours**
Writing of reports or projects [AUTÓNOMA][Self-study]	19.5
Class Attendance (theory) [PRESENCIAL][Lectures]	37.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	77.5
	Total horas: 134.5

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Forouzan, Behrouz A.	TCP/IP protocol suite	McGraw-Hill Higher Education		9780073376042	2010	
Varios	Libros del CCNA de Cisco	Pearson Educación International			2009	
Kurose, James F.	Computer networking : a top-down approach	Addison-Wesley			2009	
Comer, Douglas E	Computer networks and internets	Pearson Educación Internationa		0136061273	2009	
Forouzan, Behrouz A.	Transmisión de Datos y Redes de Comunicaciones	McGraw-Hill, 4 edition			2007	
Jose Luis Flores Barroso, Ignacio Arenaza Nuño y Iñaki Velez de Mendizabal	Servicios de Red en Linux: DNS, DHCP, WWW, Correo y Proxy	Mondragon Unibertsitateko Zerbitzu Editorariala			2008	
Comer, Douglas E	Internetworking with TCP/IP, vol. 1: Principles, protocols and architectures	Prentice Hall, 4 edition			2000	
Michael J. Donahoo and Kenneth L. Calvert	TCP/IP Sockets in C. Practical Guide for Programmers	Elevier Inc., 2nd edition			2009	