UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: MOBILE NETWORKS AND SERVICES
Code: 42395
Type: ELECTIVE
ECTS credits: 6
Degree: 347 - DEGREE PROGRAMME IN COMPUTER SCIENCE ENGINEERING (CR)
Academic year: 2020-21
Center: 108 - SCHOOL OF COMPUTER SCIENCE OF C. REAL
Group(s): 20
Year: 4
Duration: C2
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **FELIX JESUS VILLANUEVA MOLINA** - Group(s): **20**

Building/Office	Department	Phone number	Email	Office hours
Fermín Caballero / 3.12	TECNOLOGÍAS Y SISTEMAS DE INFORMACIÓN		Felix.Villanueva@uclm.es	Available at https://esi.uclm.es/categories/profesorado-y-tutorias

2. Pre-Requisites

It is highly recommended to have passed the subjects of:

Computer Networks I and II
Programming principles I and II
Distributed Systems

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

The new wireless technologies are enabling new applications in various domains (intelligent agriculture, industry 4.0, intelligent cities, etc.), this subject aims to learn to select the best technology for each scenario and to design solutions based on these technologies.

Specifically, this subject is framed within the optional subject in the undergraduate training and is aimed at providing the student with knowledge related to wireless networks, characteristics of them and design of applications on mobile devices, case studies of commercial platforms, development of systems based on sensor networks and development of services for mobile phones.

4. Degree competences achieved in this course

Course competences

Code	Description
BA01	Ability to solve mathematical problems which can occur in engineering. Skills to apply knowledge about: lineal algebra; integral and differential calculus; numerical methods, numerical algorithms, statistics, and optimization.
IC01	Ability to design and build digital systems, including computers, based on microprocessors and communication systems.
PER01	Team work abilities.
SIS01	Critical thinking.
TI04	Ability to select, design, develop, integrate, and manage communication networks and infrastructures in a organisation.
UCLM01	Command of a second language at a B1 level within the Common European Framework of Reference for Languages
UCLM02	Ability to use Information and Communication Technologies.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

An understanding of how technology has evolved in engineering and particularly in computers, such that it will allow the interpretation and analysis of future innovations.

Knowledge and experience in the use of the characteristics of the development platforms for mobile systems and an ability to design applications and services on them.

Knowledge of the basics of low-coupling architectures for the development of distributed and scalable applications on the Internet.

6. Units / Contents

Unit 1: Wireless communication fundamentals
Unit 2: wireless networking for IoT
Unit 3: wireless personal area network
Unit 4: wide area wireless networks
Unit 5: App development
Unit 6: Mobile Services

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	IC01 SIS01 TI04 UCLM01 UCLM02	0.72	18	N	-	Exposition of the lesson by the professor
Individual tutoring sessions [ON-SITE]		SIS01 UCLM01	0.18	4.5	N	-	Individual mentorship or reduced groups in the office, classroom or laboratory.
Study and Exam Preparation [OFF-SITE]	Self-study	BA01 IC01 SIS01 TI04	2.1	52.5	N	-	Individual study
Other off-site activity [OFF-SITE]	Practical or hands-on activities	BA01 IC01 PER01 SIS01 TI04 UCLM01 UCLM02	0.6	15	N	-	Individual preparation of the lab work.
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	BA01 IC01 SIS01	0.6	15	Y	N	Case study analysis and problem resolution by professor and students.
Writing of reports or projects [OFF-SITE]	Self-study	BA01 IC01 SIS01 TI04 UCLM01 UCLM02	0.9	22.5	Y	N	An individual report about a specific topic suggested by professor.
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	BA01 IC01 PER01 SIS01	0.6	15	Y	Y	Laboratory work.
Other on-site activities [ON-SITE]	Assessment tests	BA01 IC01 SIS01 TI04 UCLM01 UCLM02	0.15	3.75	Y	Y	Exam about the first half of the topics of the subject.
Other on-site activities [ON-SITE]	Assessment tests	BA01 IC01 SIS01 TI04 UCLM01 UCLM02	0.15	3.75	Y	Y	Exam about the second half of the topics of the subject.
		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
Test	25.00%	25.00%	Partial Test 1. Compulsory activity that can be retaken (rescheduling). To be carried out at the end of the first half of the teaching period
Test	25.00%	25.00%	Partial Test 2. Compulsory activity that can be retaken. To be carried out within the planned dates of the final exam call. The Partial Test 1 retake will be performed at this date.
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
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. The evaluation of the activities will be global and therefore must be quantified by means of a single mark. If the activity consists of several sections, each section may be evaluated separately provided students are informed in writing of this evaluation criterion at the beginning of the academic year. 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 partial tests 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 exam call (convocatoria extraordinaria). The oral presentations assessment (non-recoverable activity) will be conserved for the resit/retake exam call 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 latter grade obtained.
The qualification of the passed activities in any call, except for the partial tests, will be conserved for the next academic year at the request of the student, provided that it is equal or superior to 5 and the training activities and the evaluation criteria of the subject are not modified in the next academic year.
The failure of a student to attend the partial 1 and partial 2 tests 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 who are unable to attend training activities on a regular basis may apply at the beginning of the semester for the non-continuous assessment mode. Similarly, if a student who is undergoing continuous assessment incurs any circumstance that prevents her/him from regularly attending the classroom-based training activities, she/he may renounce the accumulated mark in continuous assessment and apply for the non-continuous assessment mode. In this case, a notification by the student must be given before the date scheduled for the tests in the ordinary call, in accordance with a deadline that will be informed at the beginning of the semester. Students who take the non-continuous assessment 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 assessment".
In the "non-continuous assessment" 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.

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 course is taught in three weekly sessions of 1.5 hours.

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Andres F. Molisch	Wireless Communications	Wiley		0470741864	2010	
Mark Ciampa	CWNA Guide to Wireless LANs	Thomson		0619215798	2005	
Paul GOLDIN	Connected Services: A Guide to the Internet Technologies Shaping the Future of Mobile Services and Operators	Wiley		0470974559	2011	
Stallings, William	Wireless communications and networks	Pearson Education International		0-13-196790-8	2005	