

## SUBJECT TEACHING GUIDE

M1609 - Protocols and services for new generation networks

Master's Degree in Telecommunication Engineering

Academic year 2021-2022

1. IDENTIFYING DATA					
Degree	Master's Degree in Telecommunication Engineering			Type and Year	Compulsory. Year 2
Faculty	School of Industrial Engineering and Telecommunications				
Discipline					
Course unit title and code	M1609 - Protocols and services for new generation networks				
Number of ECTS credits allocated	5	Term	Semester based (1)		
Web	<a href="http://www.tlmat.unican.es">http://www.tlmat.unican.es</a>				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA DE COMUNICACIONES
Name of lecturer	JORGE LANZA CALDERON
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Other lecturers	LUIS SANCHEZ GONZALEZ

### 3.1 LEARNING OUTCOMES

- Understand the architectures to design and develop distributed systems for next generation networks.
- Understand the methodologies to deploy services that fits the business requirements
- Understand and apply techniques for data management and interpretation
- Use of mechanisms for secure identification and management of services

#### 4. OBJECTIVES

Study in detail the concept of integration of services and the employed methodologies
Interpret the architectures for the discovery and publication of services in distributed systems
Understand the procedures for the deployment of services employing cloud computing resources
Exploit the semantic information as a link between data and services to improve the interoperability among applications and systems
Analyze different alternatives to provide services and enable intercommunication between devices in a secure manner making use of smart card technologies and near field communications.

#### 6. COURSE ORGANIZATION

CONTENTS	
1	THEME IV: SECURE SERVICES THROUGH WIRELESS TECHNOLOGIES. Smart Cards. Near Field Communications. Java development over Bluetooth. Routing. Energy saving over wireless networks
2	THEME I: SERVICE ORIENTED ARCHITECTURES (SOA). Terminology. Architecture. Distributed services and web services: SOAP, REST. Service Discovery. Web applications development. Services in Sensor Networks and IoT MQTT
3	THEME II: CLOUD COMPUTING. Concept. Features. Service models: SaaS, PaaS, IaaS

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Continuous Evaluation	Written exam	No	Yes	20,00
Practice sessions	Laboratory evaluation	Yes	No	40,00
Final exam	Written exam	Yes	Yes	40,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>Practice sessions are mandatory.</p> <p>Final mark is obtained by applying the following formula, in which TEOR is the mark from theory sessions and PRAC is the mark from the practice sessions: <math>MARK = TEOR * 0.6 + PRAC * 0.4</math></p> <p>The mark from the theory sessions (i.e. TEOR) comes from the marks obtained from the Continuous Evaluation (EC) tests and the one from the Final Exam (EF). In any case, it will be necessary to get a mark above 4.0 in the Final Exam to pass.</p> <p>Moreover, the mark from the EC will not harm the final mark so <math>TEOR = \max\{0.7 * EF + 0.3 * EC; EF\}</math></p> <p>Evaluation would be carried out online in case required. The teacher could ask the students to present the exam answers during individual sessions.</p>				
<b>Observations for part-time students</b>				
<p>Continuous Evaluation is not mandatory. Those students that do not take it will have their final mark from the marks of the Practice sessions and from the Final Exam.</p>				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Erl, Thomas, "Service-oriented architecture: concepts, technology, and design", The Prentice Hall service-oriented computing series from Thomas Erl, 2005

Richardson, Leonard y Ruby, Sam, "RESTful web services", O'Reilly 2007

Wolfgang Rankl, Wolfgang Effing, Smart Card Handbook, 4th Edition, Ed. Willey, 2010

Sosinsky, Barrie, "Cloud computing bible", Ed. Willey 2011

Dean Allemang, James Hendler, "Semantic Web for the Working Ontologist, Second Edition: Effective Modeling in RDFS and OWL", 2011