# SUBJECT TEACHING GUIDE

## M1609 - Protocols and services for new generation networks

## Master's Degree in Telecommunication Engineering

Academic year 2020-2021

| 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 | http://www.tlmat.unican.es | | | | |
| Language of instruction | Spanish | English Friendly | No | Mode of delivery | Face-to-face |

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|---|---|
| Department | DPTO. INGENIERIA DE COMUNICACIONES |
| Name of lecturer | JORGE LANZA CALDERON |
| E-mail | jorge.lanza@unican.es |
| Office | Edificio Ing. de Telecomunicación Prof. José Luis García García. Planta: - 2. DESPACHO (S227) |
| Other lecturers | LUIS SANCHEZ GONZALEZ |

| 3.1 LEARNING OUTCOMES |
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| - 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

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| 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 |
| TOTAL | | | | 100,00 |

Observations

Practice sessions are mandatory.
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: MARK = TEOR * 0.6 + PRAC * 0.4
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. Moreover, the mark from the EC will not harm the final mark so TEOR = max{0.7 * EF + 0.3 * EC; EF}
Evaluation would be carried out online in case required. The teacher could ask the students to present the exam answers during individual sessions.

Observations for part-time students

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.

| 8. BIBLIOGRAPHY AND TEACHING MATERIALS |
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| 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 |