SUBJECT TEACHING GUIDE

G842 - Protocols for Network Interconnection

Degree in Telecommunication Technologies Engineering

Academic year 2017-2018

1. IDENTIFYING DATA					
Degree	Degree in Telecommunication Technologies Engineering			Type and Year	Optional. Year 3
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Telematic Applications and Services				
Course unit title and code	G842 - Protocols for Network Interconnection				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web	http://www.tlmat.unican.es				
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA DE COMUNICACIONES
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Other lecturers	

3.1 LEARNING OUTCOMES

- Understand the Internet's protocols architecture.
  The student will have the capacity to decide, design and develop a communication network/service based on specific use cases.
  The student will recognize and understand the most important, present and future, protocols' architectures.
  The student will be able to identify and describe a communication network as well as the services included therein.

4. OBJECTIVES

To enlarge the understanding of current communication networks ' systems by thoroughly describing the Internet's architecture and its relation with the OSI model.
To study in detail the Internet's layered model, mainly the protocols used at Network level (IP) and those used at Transport level (TCP and UDP).
To analyse the evolution of the interconnection protocols at the Internet and to study the solutions adopted for the provision of services in mobile scenarios.

6. COURSE ORGANIZATION

CONTENTS	
1	Theme I: TCP/IP Architecture. The Internet model. Network access layer. IP addressing. Internet Protocol (IP). IP accessory protocols
2	Theme II: NETWORKS INTERCONNECTIONS. Interconnection at link level. Spanning Tree Protocol. Transparent bridges. Network level interconnection. Routing protocols (distance-vector and link-state).
3	Theme III: TRANSPORT LAYER PROTOCOLS. The transport layer. UDP protocol. TCP protocol. The socket interface. Sequential and concurrent servers.
4	Theme IV: NEXT GENERATION INTERNET: IPv6
5	Theme V: MOBILE INTERNET: Interconnection at mobile and wireless networks. Handovers and roaming. Mobile IP.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Practice sessions evaluation	Laboratory evaluation	Yes	No	20,00
Continuous evaluation	Others	No	Yes	24,00
Final exam	Written exam	Yes	Yes	56,00
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 * 0.8 + PRAC * 0.2
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}
Continuous Evaluation tests are meant to encourage the student to follow the subject on a day-by-day basis rather than at intervals fixed by the tests themselves. Hence, the marks for these tests and problems will only be available during the exams' review session after the Final Exam.

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

BASIC

Charles M. Kozierok: The TCP/IP guide: a comprehensive, illustrated Internet protocols reference, No Starch Press, 2005
W. Richard Stevens: TCP/IP Illustrated: The protocols, Addison-Wesley Professional, 1994
Silvia Hagen: IPv6 Essentials, O'Reilly Media, Inc., 2º ed. 2006
Kurose, Ross: Redes de Computadores, Pearson, Addison Wesley, 2003
W. Stallings, Redes e Internet de Alta Velocidad Prentic Hall 2º ed. 2004
S.S. Jones ed., The Basics of Telecommunications International Engineering Consortium IEC 5º ed, 2004