



TEACHING DIRECTORY 2009 - 2010

Subject (31676) SEMINAR: AD HOC AND MESH NETWORKING: MAC, ROUTING AND QOS

Abstract

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General description of the subject

Main aspects of ad hoc networks are introduced

Abilities

Degree	Competence	Level
MASTER'S DEGREE IN COMMUNICATIONS TECHNOLOGIES, SYSTEMS AND NETWORKS	Formar investigadores y profesionales de alta cualificación en el conocimiento y diseño de sistemas de tiempo real distribuidos, y en particular de las arquitecturas y protocolos necesarios para las comunicaciones multimedia y sus mecanismos de distribución y seguridad utilizados.	Necessary (2)
MASTER'S DEGREE IN COMMUNICATIONS TECHNOLOGIES, SYSTEMS AND NETWORKS	Formar investigadores y profesionales de alta cualificación en el diseño de elementos y subsistemas que formen parte de un sistema de comunicaciones.	Advisable (3)
MASTER'S DEGREE IN COMMUNICATIONS TECHNOLOGIES, SYSTEMS AND NETWORKS	Formar investigadores y profesionales de alta cualificación en el diseño, implementación y evaluación de prestaciones de las redes de comunicaciones tanto fijas como móviles, así como en el proceso de creación de la Sociedad de la Información.	Necessary (2)

Degree	Subject matter	Competence	Level
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Recommended knowledge

Previous

Degree	Subject
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Simultaneous

Degree	Subject
MASTER'S DEGREE IN COMMUNICATIONS TECHNOLOGIES, SYSTEMS AND NETWORKS	(30748) MOBILE COMMUNICATION NETWORKS: ARCHITECTURE AND PROTOCOLS
MASTER'S DEGREE IN COMMUNICATIONS TECHNOLOGIES, SYSTEMS AND NETWORKS	(30749) WIRELESS LOCAL AREA NETWORKS

Didactic units structure and selection

1. L1: Mobility, ad hoc, and wireless networks
 - Part I: A big picture on mobility
 - Part II: Introduction to ad hoc networking
 - Part III: IEEE 802 wireless networks and wireless mesh networks
2. 802.11 WLANs and 802.11 based ad hoc networks
 - Part I: 802.11 WLANs
 - Part II: Throughput analysis in 802.11 WLANs
 - Part III: UDP and TCP traffic in 802.11 based on ad hoc networks
3. Routing in multi-hop ad hoc networks
 - Part I: Routing in the Internet
 - Part II: Overview of MANET routing protocols
 - Part III: AODV
 - Part IV: OLSR

Distribution

Didactic unit	Compulsory attendance project	Non-attendance project
L1: Mobility, ad hoc, and wireless networks - Part I: A big picture on mobility - Part II: Introduction to ad hoc networking - Part III: IEEE 802 wireless networks and wireless mesh networks	3,00	5,00
802.11 WLANs and 802.11 based ad hoc networks - Part I: 802.11 WLANs - Part II: Throughput analysis in 802.11 WLANs - Part III: UDP and TCP traffic in 802.11 based on ad hoc	3,00	5,00

networks

Routing in multi-hop ad hoc networks

3,00

5,00

- Part I: Routing in the Internet

- Part II: Overview of MANET routing protocols

- Part III: AODV

- Part IV: OLSR

Total amount of hours

9,00

15,00

Teaching-learning methodology

Compulsory attendance subjects

Name	Description	hours
Lecture	Exposure of contents through a presentation or explanation by a teacher (possibly including demonstrations).	8,00
Assessment	Collection of written and oral tests, practices, projects, essays, etc. used to assess the student's progress	1,00
Total amount of hours		9,00

Self-learning subjects.

Name	Description	hours
Practical work	Preparation of activities to be shown or handed in during the practice classes	6,00
Theory	Study of contents related to "theory classes". It includes any activity of study that has not been taken into account in the previous section (study for exams, library work, complementary reading, carrying out problems and exercises, etc.)	9,00
Total amount of hours		15,00

Assessment

Name	Description
One minute questions	Open questions that are formulated at the end of a class (two or three)

Resources

· slides

Bibliography

R. Ramanathan and J. Redi, "A Brief Overview of Ad Hoc Networks: Challenges and Directions", IEEE Communications Magazine (50th anniversary issue), May 2002.

H-Y. Lach, C. Janneteau, and A. Petrescu, "Network Mobility in Beyond-3G Systems", IEEE Communications Magazine, July 2003.

I. Chlamtac, M. Conti and J. J-N. Liu, "Mobile Ad Hoc Networking: Imperatives and Challenges", Elsevier Ad Hoc Networks, Vol. 1, No. 1, July 2003.

X. Hong, K. Xu and M. Gerla, "Scalable Routing Protocols for Mobile Ad Hoc Networks", IEEE Network, July/August 2002, pp. 11-21.

R. Bruno, M. Conti, and E. Gregori, "Mesh Networks: Commodity Multihop Ad Hoc Networks", IEEE Communications Magazine, Vol. 43, No. 3, pp. 123-131, March 2005.

S. M. Faccin, C. Wijting, J. Knecht, and A. Damle, "Mesh WLAN Networks: Concept and System Design", IEEE Wireless Communications, Vol. 13, No. 2, pp. 10-17, April 2006.
