IDENTIFYING DATA

(*)Multimedia e Internet

Subject	(*)Multimedia e Internet
Code	V05M039V01105
Study programme	(*)Máster Universitario en Enxeñaría Telemática

Descriptors	ECTS Credits	Choose	Year	Quadmester
	4	Optional	1st	1st

Teaching language	
Department	
Coordinator	López Ardao, José Carlos
Lecturers	López Ardao, José Carlos
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General description	The aim of this course is to familiarize the student with all the problems concerning the transmission of multimedia data over the Internet at the level of implementation, with particular attention to the problem of multicast, the increasingly common scenario of IP telephony and the further transmission of television signals over the Internet.

Competencies

Code	
A1	(*)Adquirir un conocimiento avanzado de las técnicas, algoritmos y teorías más recientes en el área de las redes y los servicios telemáticos
A2	(*)Dominar y practicar las técnicas y metodologías básicas empleadas en la investigación en el área de la ingeniería telemática: modelado y análisis matemático, experimentación y pruebas
A3	(*)Capacidad de criticar, discutir y proponer razonadamente mejoras de las teorías, los métodos y las prácticas conocidos
A5	(*)Capacidad para elaborar documentos técnicos, de carácter científico o divulgativo, con el fin de promover la adopción de métodos novedosos, de difundir conocimientos o de contribuir a la estandarización de las tecnologías, los sistemas o los algoritmos inherentes a cualquier parte de un sistema telemático
B1	(*)Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios o multidisciplinares relacionados con el campo de estudio
B2	(*)Que los estudiantes aprendan a desarrollar conceptos, teorías o principios originales con los que dar solución a problemas nuevos derivados de avances que hayan tenido lugar en las disciplinas científicas básicas que integran su campo de estudio
B4	(*)Que los estudiantes sepan comunicar sus ideas, sus conclusiones ---y los conocimientos y razones últimas que las sustentan--- a públicos especializados y no especializados de un modo claro y sin ambigüedades, y que se formen específicamente para la enseñanza de los conceptos, los principios y las tecnologías que les son propios en los distintos niveles educativos
B5	(*)Que los estudiantes adquieran habilidades de aprendizaje que les permitan actualizar sus conocimientos de un modo autónomo, consciente y crítico

Learning aims

Expected results from this subject	Typology	Training and Learning Results
(*)Conocer las características del tráfico multimedia de cara a evaluar el impacto de la transmisión y reproducción de información en tiempo real.	know Know How	A1
(*)Conocer las diferencias, ventajas e inconvenientes de los distintos algoritmos de codificación de audio y vídeo de cara a su aplicación práctica.	know	A1
(*)Conocer los protocolos, normas y distintas soluciones utilizadas en el ámbito de la transmisión de información multimedia.	know	A1

(*)Adquirir la capacidad para analizar y resolver los problemas asociados a la transmisión de información multimedia sobre Internet haciendo especial hincapié en las aplicaciones de VoIP e IPTV.	Know How	A1 A2 A3 A5 B1 B2 B4 B5

Contents

Topic
(*)Naturaleza y características del tráfico multimedia
(*)Comprensión de audio (G.729, G.723.3, MP3, etc.) y vídeo (normas MPEG, H.261)
(*)Protocolos: RTP/RTCP,RTSP,SIP,H.323,RSVP
(*)Multicast e Internet
(*)Telefonía IP
(*)IPTV

Planning

	Class hours	Hours outside the classroom	Total hours
Seminars	0	30	30
Tutored works	0	30	30
Forum Index	0	10	10
Jobs and projects	0	20	20
Systematic observation	0	10	10

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Seminars	Presentation and review of the documentation required to follow the course. This documentation will provide the student through the learning platform and will include web materials prepared by the teacher as well as selected readings. Also contemplated is the critical discussion of knowledge covered in the forums tool.
Tutored works	Making individual supervised research. The presentation will be made in writing (following the format of a scientific paper) and posted on the website of the subject.
Forum Index	Presentation and defense of individual works properly responding to questions in the forum for both the teacher and by peers

Personalized attention

Methodologies	Description
Tutored works	In the supervised work training activities, the teacher of the course guide provide personalized attention to each student about the work you have chosen to guide the approach and matodología preparation. Also provide information for coordination with other content and curriculum subjects.

Tests	Description
Jobs and projects	In the supervised work training activities, the teacher of the course guide provide personalized attention to each student about the work you have chosen to guide the approach and matodología preparation. Also provide information for coordination with other content and curriculum subjects.

Assessment

	Description	Qualification
Tutored works	Understanding, maturity, importance and originality of the essay	50
Forum Index	Presentation and defence of the individual works answering properly to the questions posed in the forum so much by the professor and by his mates	25
Jobs and projects	See Traballos tutelados	*
Systematic observation	Participation of the student in the discussions posed during the seminars and/or forums of the matter; including so much the resolution of problems/question proposals by the professor, as the contribution of new ideas and the collaboration in the resolution of doubts of other mates	25

Other comments on the Evaluation

Sources of information

Braun, T, **Internet protocols for multimedia communications. I. IPng-the foundation of Internet protocols**, IEEE Multimedia, Volume 4, Issue 3,

Braun, R., **Internet protocols for multimedia communications. II. Resource reservation, transport, and application protocols**, IEEE Multimedia, Volume 4, Issue 4,

Furht, B.; Westwater, R.; Ice, J., **Multimedia broadcasting over the Internet**, IEEE Multimedia, Volume 5, Issue 4,

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Qian Zhang; Wenwu Zhu; Ya-Qin Zhang, **Resource allocation for multimedia streaming over the Internet**, IEEE Transactions on Multimedia, Volume 3, Issue 3,

Pourmohammadi-Fallah, Y.; Asrar-Haghighi, K.; Alnuweiri, H.M., **Streaming multimedia over the Internet**, EEE Potentials, Volume 23, Issue 1,

Metz, C., **Internet multimedia: answering basic questions**, IEEE Internet Computing, Volume 9, Issue 4,

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Markopoulou, A.P.; Tobagi, F.A.; Karam, M.J., **Assessment of VoIP quality over Internet backbones**, INFOCOM 2002. Twenty-First Annual Joint Conference of the IEEE Computer and Communications Societies,

Goode, B., **Voice over Internet protocol (VoIP)**, Proceedings of the IEEE Volume 90, Issue 9,

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Xiaojun Hei; Chao Liang; Jian Liang; Yong Liu; Ross, K.W., **A Measurement Study of a Large-Scale P2P IPTV System**, IEEE Transactions on Multimedia, Volume 9, Issue 8,

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Stefaan Vanhastel and Raul Hernandez, **Enabling IPTV: What□s Needed in the Access Network**, IEEE Communications Magazine,

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Naor, Z., **Multicast Content Distribution Over IP Networks**, Global Telecommunications Conference, 2007. GLOBECOM '07. IEEE,

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Sunan Han, Sam Lisle, and Greg Nehib, **IPTV Transport Architecture Alternatives and Economic Considerations**, IEEE Communications Magazine,

Emad Shihab, Lin Cai, Fengdan Wan, Aaron Gulliver, and Noel Tin, **Wireless Mesh Networks for In-Home IPTV Distribution**, IEEE Network,

Recommendations