TELEMATICS ENGINEERING B. Eng.

SEMESTER 7

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Year 2015/16

Course Name:	English for Professional and Academic Communication	Course Code:	595000233
Year:	4	**Semester:**	7
Credits (ECTS):	6	**Credit Hours:**	4
Area:	Common UPM Skills	**Type:**	Basic / Required
Term:	Fall	**Language:**	English
Prerequisites / Co-requisites:		Introduction to professional and academic communication II Introduction to professional and academic communication I	
Coordinator:		Irina Argüelles	
Bachelor Engineering Program:		Telematics Engineering Communications Electronics Engineering Telecommunications Systems Engineering Sound and Image Engineering	

Course Contents

1. Cultural diversity and interpersonal relationships

2. Colloquia and meetings. The job interview

3. Understanding of lectures

4. The understanding of academic and professional texts

5. Oral presentations

ABET Student Outcomes

(c)   An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d)   An ability to function on multidisciplinary teams

(g)   An ability to communicate effectively

(h)   The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i)   A recognition of the need for, and an ability to engage in life-long learning

(j)   A knowledge of contemporary issues

(k)   An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Study Outcomes (according to the Spanish program definition)

CG 02   Skilled to searching and selecting information, critical reasoning and writing and defending the reasoning within the defined area

CG 03   Skilled for public speaking and in written and communicating information throughout documents and public speeches.

CG 05   Ability for teamwork in multidisciplinary environments.

CG 06   Ability for adaptability, negotiation, conflict resolution and leadership.

CG 12   Ability for interpersonal relationships and work in a national and international context with capacity to express themselves oral and written in English-language form.

Specific outcomes of instruction (according to the Spanish program definition)

1.-   Elaborate schemes and organize draft texts as reports or essays well structured.

2.-   Produce texts clear and detailed on various topics as well as defend a point of view on general topics stating the pros and cons of the different options in English language.

3.-   Organize your ideas and opinions of consistently in an academic work.

4.-   Understand the main ideas of complex texts in the English language of both concrete and abstract topics, even if they are of a technical nature within their field of specialization.

5.-   Adequately synthesize information related to their studies.

6.-   Organize information properly in sentences and paragraphs.

7.-   Contrasted their ideas with the contributed by other authors.

8.-   Interact with native speakers of English language with one degree of fluency and spontaneity so that communication is performed effortlessly by any of the partners.

Bibliography

"Cambridge Academic English Upper", Cambridge.

"Cambridge English for Job-Hunting", Cambridge.

"Business Vocabulary Builder Intermediate to Upper intermediate", MacMillan.

"Presenting in English", Heinle.

"Presentations in English", MacMillan.

"English for presentations", Oxford.

"Successful presentations", Oxford.

Course Name:	Mobile Communications Networks	Course Code:	595000234
Year:	4	Semester:	7
Credits (ECTS):	6	Credit Hours:	4
Area:	Telematics Networks, Systems and Services	Type:	Engineering Topic / Required
Term:	Fall	Language:	Spanish
Prerequisites / Co-requisites:		Telecommunication Networks and Services Computer Networks Signaling and Switching Advanced Networks and Services	
Coordinator:		Carlos Ramos	
Bachelor Engineering Program:		Telematics Engineering	

Course Contents

1. Introduction to cellular mobile systems

2. GSM Systems: GSM, GPRS, EDGE

3. 3G Systems: UMTS, HSDPA, HSUPA

4. Introduction to 4G mobile systems

ABET Student Outcomes

(a)   An ability to apply knowledge of mathematics, science, and engineering

(b)   An ability to design and conduct experiments, as well as to analyze and interpret data

(d)   An ability to function on multidisciplinary teams

(e)   An ability to identify, formulate, and solve engineering problems

(g)   An ability to communicate effectively

(h)   The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(j)   A knowledge of contemporary issues

(k)   An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Study Outcomes (according to the Spanish program definition)

CE TM01   Ability to build, utilize and manage telecommunication services and applications for the acquisition, transport, representation, processing, storage, management and presentation of multimedia information, from the point of view of telematic services.

CE TM02   Ability to apply techniques on which telematic networks, services and applications are based, such as management, signaling and switching, routing,

security (cryptographic protocols, tunneling, firewalls, digital payment, authentication, and content protection), traffic engineering (graph theory, queuing theory, tele traffic), billing, reliability and quality of service, whether in fixed or mobile environments, local or long distance, with different bandwidths, including telephony and data..

CE TM05   Ability to advance with the technological progress in the areas of transmission, switching and processing in order to improve networks and telematic services.

CE TM08   Ability to carry out professional projects in the specific field of telecommunication technologies in which competences attained in the program have to be synthesized and integrated.

CG 03   Skilled for public speaking and in written and communicating information throughout documents and public speeches.

CG 05   Ability for teamwork in multidisciplinary environments.

CG 10   Ability to handle specifications, rules and regulations and to apply them in the practice of the profession.

Specific outcomes of instruction (according to the Spanish program definition)

1.- Ability to apply techniques that are based on networks, services and telematics applications in mobile environments, local and wide area, with different bandwidths and including telephony and data, systems management, signaling and switching, routing and routing and quality of service

2.- Ability to describe the basic characteristics of cellular mobile systems.

3.- Ability to identify emerging technological alternatives in 4G.

4.- Ability to explain the structures of protocols on GSM/GPRS/EDGE interfaces.

5.- Ability to justify functional improvements between 2G technologies.

6.- Ability to detail the functionality of the elements of architecture in the 3G network: UMTS/HSDPA/HSUPA.

7.- Ability to establish a chronological classification comparison of mobile communications systems.

8.- Ability to relate messages signaling with the services of the level of link and the logical channels defined in the networks GSM/GPRS/EDGE radio interface.

9.- Ability to explain technical and functional improvements among the 3G technologies.

10.- Ability to identify the functionality of control messages exchanged in the networks GSM/GPRS/EDGE radio interface.

Bibliography

Hernando Rábanos, José M. Comunicaciones móviles (2ª edición). Ed. Centro de Estudios Ramón Areces, 2004.

Lluch Mesquida, Cayetano. Comunicaciones móviles de tercera generación UMTS. Ed. Telefónica Móviles España, Madrid, 2000

Cox, Christopher. Essentials of UMTS. Ed. Cambridge University Press, New York, 2008.

Kaaranen, Heikki. UMTS Networks: architecture, mobility and services? (2nd Ed.). Ed. John Wiley & Sons, 2005.

Kreher, Ralf. UMTS signaling: UMTS interfaces, protocols, message flows and procedures analyzed and explained? (2nd Ed.). Ed. John Wiley & Sons, 2007.

Huidobro Moya, José Manuel. Comunicaciones móviles: GSM, UMTS, LTE?. Ed. Ra-Ma Madrid, 2012.

Holma, Harri. WCDMA for UMTS: HSPA Evolution and LTE. 5ª Ed. Ed. Wiley, 2010.

Course Name:	Communications Software	Course Code:	595000235
Year:	4	Semester:	7
Credits (ECTS):	4,5	Credit Hours:	3
Area:	Telematics Applications	Type:	Engineering Topic / Required
Term:	Fall	Language:	Spanish
Prerequisites / Co-requisites:		Computer Networks Modeling Languages Information Processing In Telematic Applications Telecommunication Networks and Services Operating Systems Advances Applications Programming	
Coordinator:		Francisco Javier Estaire	
Bachelor Engineering Program:		Telematics Engineering	

Course Contents

1. Introduction to application distribution

2. Remote Procedure Calls: RPC

3. Remote Method Invocation: RMI

4. Industry Distributed Object Architecture : CORBA

5. Web Services

ABET Student Outcomes

(b)   An ability to design and conduct experiments, as well as to analyze and interpret data

(e)   An ability to identify, formulate, and solve engineering problems

(j)   A knowledge of contemporary issues

(k)   An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Study Outcomes (according to the Spanish program definition)

CE TM07   Ability to program networked, distributed, or interactive services and applications, taking into account usability and accessibility criteria.

CG 03   Skilled for public speaking and in written and communicating information throughout documents and public speeches.

CG 04   Ability to abstract, analyze, and synthesize, and to solve problems.

CG 10   Ability to handle specifications, rules and regulations and to apply them in the practice of the profession.

Specific outcomes of instruction (according to the Spanish program definition)

1.- Learn about services, components, and the layer of RPC communications protocol.

2.- Ability to use standard application data modeling languages.

3.- Ability to apply the techniques of manipulation of the modeled data.

4.- Learn about services, components, and the layer of RPC communications protocol.

5.- Design and implement an RPC-based distributed application.

6.- Learn about services, components and tools for the development of the CORBA infrastructure.

7.- Learn about components (WSDLy UDDI SOAP) and Web services infrastructure development tools.

8.- Learn about services and basic elements of a layer of communications software (middleware).

9.- Design and implement a distributed application based on CORBA.

10.- Design and implement a Web service defining service with WSDL, using free development tools, and development of clients accessing the service.

11.- Learn about the mechanisms of management, distribution, and exchange of data and objects.

12.- Ability to analyze data and manipulating them in the exchange of data between telematics applications.

13.- Design and implement an RMI-based distributed application.

14.- Learn about services, components and tools of the RMI infrastructure development.

15.- Ability to determine the mechanism of exchange of data most suitable for each telematics application.

16.- Learn basic layout design patterns.

Bibliography

Moodle Web Resources