

COMMUNICATIONS ELECTRONICS ENGINEERING B. Eng.

SEMESTER 8

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Project Management 3
Electronic Systems Engineering 6
Final Degree Project..... 8

Year 2015/16

Course Name:	Project Management	Course Code:	595000037
Year:	4	Semester:	8
Credits (ECTS):	4,5	Credit Hours:	3
Area:	Organization Engineering	Type:	Engineering Topic / Required
Term:	Spring	Language:	Spanish
Prerequisites / Co-requisites:		None	
Coordinator:		Margarita Martínez	
Bachelor Engineering Program:		Communications Electronics Engineering Telecommunication Systems Engineering Sound and Image Engineering Telematics Engineering	

Course Contents

1. Introduction to Project management
2. Starting a Project and feasibility studies
3. The engineering Project
4. Methodology of Project management
5. The professional environment of the Project maker

ABET Student Outcomes

- (b) An ability to design and conduct experiments, as well as to analyze and interpret data
- (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
- (e) An ability to identify, formulate, and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (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 03 Ability to express oneself in oral and written form, and to convey information through documents and public presentations.
- CG 05 Ability for teamwork in multidisciplinary environments.
- CG 06 Ability for adaptability, negotiation, conflict resolution and leadership.
- CG 07 Ability to design, manage, and direct projects.
- CG 08 Ability to organize, plan and make decisions.
- CG 09 Ability to analyze and assess the social and environmental impact of technical solutions.
- CG 10 Ability to handle specifications, rules and regulations and to apply them in the practice of the profession.
- CG 14 An attitude of Ethics and professional responsibility, as well as respect for human rights and cultural diversity.
- CE B5 Acceptable knowledge of the concept of company, institutional and juridical frame of the company. Companies Organization and management.
- CE TEL 01 Ability to independently learn new knowledge and skills adequate for the design, development or utilization of telecommunication systems and services.
- CE TEL 02 Ability to use communication and computer applications (office automation, databases, advanced calculus, project management, visualization...) to support the development and utilization of networks, services and telecommunication and electronics applications.
- CE TEL 06 Ability to design, deploy, organize and manage telecommunication networks, systems, services and infrastructures in residential (home, city and digital communities), business or institutional contexts, including setup, continuous improvement, and understanding of their economic and social impact.

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

- 1.- Knowledge of the project basics and knowledge of the peculiarities of the telecommunication project.
- 3.- Knowledge of the main techniques of evaluation of projects (go, IR, IRR).
- 4.- Knowledge of the main techniques of programming projects (GANT, PERT).
- 5.- Familiarity with the project documents: memory, plans, specifications, budget.
- 6.- Identify the main risks associated with the development of a project.
- 7.- Prepare technical presentations for the oral defense of an engineering project properly using audiovisual media.
- 8.- Construct time diagrams using planning and scheduling tools of projects.
- 9.- Describe the main functions and responsibilities of a project manager..
- 10.- Find the necessary information for the design of an engineering project.
- 11.- Assess the feasibility of an engineering project from the technical, environmental, economic and financial point of view.
- 12.- Write correctly the contents of a technical project, according to contained minimum requirements by legislation

- 13.- Identify the rules and regulations of application to engineering in a determined field projects.

Bibliography

“Introducción a la gestión de proyectos. La iniciación del proyecto y sus estudios de viabilidad. El proyecto de ingeniería. Metodología de la gestión de proyectos”, M. Martínez, W. Pérez y F. del Río, Dpto. Publicaciones, 2013.

Year 2015/16

Course Name:	Electronic Systems Engineering	Course Code:	595000038
Year:	4	Semester:	8
Credits (ECTS):	4,5	Credit Hours:	3
Area:	Systems Engineering and Electronic Products	Type:	Engineering Topic / Required
Term:	Spring	Language:	Spanish
Prerequisites / Co-requisites:	Microprocessors, Analog Electronics I Programming I, Programming II Operating Systems, Digital Design I, Microprocessor-based Systems Production Technologies Of Electronics Systems, Electronic Instrumentation, Electronic Power Systems		
Coordinator:	Julián Nieto		
Bachelor Engineering Program:	Communications Electronics Engineering		

Course Contents

1. Implementation of an electronic system
2. Introduction to embedded 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
- (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 Ability to search and select information, develop critical thinking and produce and defend arguments within the area..
- CG 11 Skills for the use of Information and Communication Technologies.
- CG 13 Learning skills with a high degree of autonomy.
- CE EC02 Ability to select circuits and specialized electronic devices for transmission and routing, as well as terminal equipment, both in fixed and mobile environments.
- CE EC03 Ability to specify, implement, document and adjust equipment and electronic systems for instrumentation and control, considering both technical and regulatory aspects.
- CE EC05 Ability to design analog and digital electronic circuits, analog-to-digital and digital-to-analog conversion circuits, radiofrequency circuits, and electric power supply and conversion circuits for applications in telecommunications and computing.

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

- 1.- Identify in a document of technical specifications of an electronic system the technical requirements needed to raise different technological alternatives for the practical implementation of the same.
- 2.- Develop an electronic system of medium complexity by combining different technologies.
- 3.- Build electronic systems using PCB applying design techniques appropriate to the type of design.
- 4.- Use of laboratory instrumentation, development and debugging commercial tools to integrate and reshape electronic circuits and systems.
- 5.- Know how to generate transferable and precise technical documentation on the developed system.

Bibliography

Slides and documentation. Moodle Web.

Year 2015/16

Course Name:	Final Degree Project	Course Code:	59500040
Year:	4	Semester:	8
Credits (ECTS):	12	Credit Hours:	8
Area:	Common UPM Skills	Type:	Engineering Topic / Required
Term:	Fall / Spring	Language:	Spanish / English
Prerequisites / Co-requisites:		200 ECTS passed	
Coordinator:		Head of Studies	
Bachelor Engineering Program:		Communications Electronics Engineering Telecommunication Systems Engineering Sound and Image Engineering Telematics Engineering	

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
- (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
- (e) An ability to identify, formulate, and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (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 Ability to search and select information, develop critical thinking and produce and defend arguments within the area..
- CG 03 Ability to express oneself in oral and written form, and to convey information through documents and public presentations.

CG 04	Ability to abstract, analyze, and synthesize, and to solve problems.
CG 07	Ability to design, manage, and direct projects.
CG 08	Ability to organize, plan and make decisions.
CG 10	Ability to handle specifications, rules and regulations and to apply them in the practice of the profession.
CG11	Skills for the use of Information and Communication Technologies.
CG 13	Learning skills with a high degree of autonomy.
CE TEL 03	Ability to use computer tools of search of bibliographical resources or of information related to the telecommunications and the electronics.
CE EC10	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.

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

- 1.- Identify and describe the problem or issue subject to investigation or analysis, taking into account the context conditions.
- 2.- Analyze a problem at different levels of abstraction.
- 3.- Set hypotheses and research objectives.
- 4.- Develop and substantiate solutions and recommendations, including multidisciplinary expertise when required.
- 5.- Write a memory of the work including temporary planning and, if appropriate, cost.
- 6.- Assess the quality of a research based on its utility.
- 7.- Collect bibliographic information, at least in two languages, concerning a concrete problem.
- 8.- Use software support to presentations.
- 9.- Using spreadsheet or other software to process data and results.
- 10.- Use specific software.
- 11.- Describe the basic knowledge related to the project, both the own field of knowledge and other related.
- 12.- Decide on the veracity and validity of theories and models considering, among other things, the assumptions on which they are based.
- 13.- Interpretar resultados.
- 14.- Design and evaluate experiments.
- 15.- Learn through non-guided study.
- 16.- Communicate results orally.
- 17.- Know and understand the relevance of historical milestones in the progress of the own field of knowledge.
- 18.- Identify, assess and discuss the social and ethical implications of technological developments.