

Course guide

230016 - PBE - Basic Engineering Project

Last modified: 25/05/2023

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 710 - EEL - Department of Electronic Engineering.

Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Consultar aquí / See here:
<https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/responsables-assignatura>

Others: Consultar aquí / See here:
<https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/professorat-assignat-idioma>

PRIOR SKILLS

Students must have passed at least three courses of the semester 2A, we recommend that are the most related to the degree in which the student has enrolled.

REQUIREMENTS

INTRODUCTION TO ICT ENGINEERING - Precorequisite

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Generical:

11 CDION2. They will be able to apply a comprehensive view of the entire life cycle (conception, design, implementation and operation) of a product, process or service in the ICC field, and identify users' needs and develop a set of requirements for the product, process or service and a set of initial specifications. They will be able to explore possible solutions and select the best one. They will be able to carry out a design process following a standardised methodology. They will know how to evaluate and propose improvements to the design. They will take into account economic and social aspects of the project or product.

Transversal:

1. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.

5. EFFECTIVE USE OF INFORMATION RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.

TEACHING METHODOLOGY

Directed activity
Lecture
Teamwork
Other activities
Oral presentation
Short answer test

LEARNING OBJECTIVES OF THE SUBJECT

The course aims to achieve a double impact:

- 1 - Consolidation and expansion of the learning outcomes of the previous or parallel courses.
- 2 - Acquisition of the learning outcomes of the listed generic skills, particularly the 3 that are specifically evaluated.

The regulated projects part has the specific purpose of providing basic skills to perform projects within the formal exercise of the profession.

Learning outcomes:

- Is able to conceive, develop, organize and manage networks, systems, services and telecommunications infrastructures in residential settings (home, city and digital communities), business and institutions, taking responsibility in their development and continuous improvement, and to know their economic and social impact.
- Is able to acquire new knowledge and techniques for the design, development or operation of telecommunications systems and services.
- Understands and manages computing and communications applications (office applications, databases, advanced computing, project management, visualization, etc..) to support the development and operation of networks, services and applications in telecommunications and electronics.
- Knows how to use search tools and bibliographic information related to telecommunications and electronics.
- Knows the rules and regulations of telecommunications in national, european and international level.
- Has acquired basic knowledge about organizations and knows the tools and techniques for managing and generating ideas.
- Takes initiatives that create new opportunities and solutions with vision of implementation, process and market.
- Recognizes the ethical, social and environmental implications of the engineering professional activity in the ICT field.
- Applies sustainability criteria and ethic codes of the profession in designing and evaluating technology solutions. Identifies the need for legislation, regulations and standards.
- Plans and conducts an oral presentation, respond appropriately to the questions formulated and writes correctly basic texts.
- Uses strategies to prepare and carry out oral presentations and writes texts and documents with a consistent content, structure and style, with an appropriate level and good spelling and grammar.
- Applies systematic design process in the implementation and operation phases. Prepares progress and final reports. Knows the basic economic aspects related to the product-process-service that is being designed.
- Identifies user needs and develops a definition of product-process-service and its initial specifications. Follows the process management model based on a standard design. Evaluates the application of laws and regulations which apply.

STUDY LOAD

| Type | Hours | Percentage |
|-------------------|-------|------------|
| Self study | 85,0 | 56.67 |
| Hours large group | 26,0 | 17.33 |
| Hours small group | 39,0 | 26.00 |

Total learning time: 150 h

CONTENTS

Sessions

Description:

Deployment and management of networks, systems, services and telecommunications infrastructure. Regulations. Non-financial report, ethical, environmental and social implications. Basic concepts of safety, health and social justice related to ICT, including the gender and the most vulnerable groups perspective.

Related activities:

- Lectures
- Labs

Full-or-part-time: 46h

Theory classes: 26h

Self study : 20h

Seminars

Description:

Advanced information gathering

Critical assessment of the responsible action of ICT companies.

Contents related to the specific project

Related activities:

- Lectures
- Practical activities
- Cooperative activities

Full-or-part-time: 14h

Guided activities: 4h

Self study : 10h

Project

Description:

Project of intermediate technical complexity, conducted in groups of 4-6 people.

The start point is the definition of a product or service common to all grades. It is broken down to subsystems. All students should be aware of the block structure of the whole system, the specifications of the system and of the interfaces between blocks. In laboratory sessions, students are grouped by degrees, so that each laboratory group carries out the design and implementation of one of the subsystems, the closest to the subject of the degree in which each student enrolled.

Specific objectives:

- Acquisition of skills in management and project documentation
- Acquisition of practical skills in the design of ICT products and services
- Learning specific content related to the topic of the project

Related activities:

- Cooperative learning sessions on topics specific to the project
- Design, implementation, characterization and evaluation of a subsystem from its specifications

Full-or-part-time: 89h

Guided activities: 35h

Self study : 54h



GRADING SYSTEM

- Regulated Projects (1/3)
- 20% lab
- 80% final test
- Design-Build Project (2/3)
- 10% of individual contribution to cooperative activities
- 30% of tests (half term and final test). Knowledge about the specific project
- 60% of group project (planning and accomplishment of the work plan milestones and tollgates. Achievement of the specifications. Project documentation)

This course will assess the following generic skills:

- Entrepreneurship and innovation (Intermediate Level)
- Effective oral and written communication (Intermediate Level)
- Ability to conceive, design, implement and operate complex systems in the ICT context (Intermediate Level)

EXAMINATION RULES.

The non-delivery or late delivery of the individual assignments that can affect the achievement of cooperative activities and of the whole project will penalize the individual note