# 230810 - REPT - Regulation, Economy and Telecommunication Policy

<table>
<thead>
<tr>
<th>Coordinating unit:</th>
<th>230 - ETSETB - Barcelona School of Telecommunications Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching unit:</td>
<td>739 - TSC - Department of Signal Theory and Communications</td>
</tr>
<tr>
<td>Academic year:</td>
<td>2017</td>
</tr>
<tr>
<td>Degree:</td>
<td>BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Teaching unit Optional)</td>
</tr>
<tr>
<td></td>
<td>BACHELOR'S DEGREE IN TELECOMMUNICATIONS SCIENCE AND TECHNOLOGY (Syllabus 2010). (Teaching unit Optional)</td>
</tr>
<tr>
<td></td>
<td>BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2010). (Teaching unit Optional)</td>
</tr>
<tr>
<td></td>
<td>BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)</td>
</tr>
<tr>
<td></td>
<td>BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Optional)</td>
</tr>
<tr>
<td></td>
<td>BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)</td>
</tr>
<tr>
<td>ECTS credits:</td>
<td>6</td>
</tr>
<tr>
<td>Teaching languages:</td>
<td>Catalan, Spanish, English</td>
</tr>
</tbody>
</table>

## Teaching staff

**Coordinator:**  
Antoni Elias Fusté  
Jofre Roca, Luis

**Others:**  
Antoni Elias Fusté  
Jofre Roca, Luis

## Opening hours

**Timetable:**  
Dimarts i dijous de 9 a 12 h.

## Prior skills

no one

## Requirements

no one

## Degree competences to which the subject contributes

### General:

08 CRPE N2. ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS Level 2. To identify, model and pose problems starting from open situations. To explore the alternatives to solve the problem and to choose the best one according to a justified criterion. To know-how to make approaches. To propose and implement methods to validate the solutions. To have a complex system vision and of interactions among complex systems components.

09 CSCT N3. ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. Level 3. To identify market needs and opportunities. To collect information to prepare specifications for a new product, process or service. To prepare a basic business plan. To conceive a new product, process or service. To develop and implement planning of a design process. To carry out the various phases of the design process.

11 CDIO N3. 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.

08 CRPE. ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS. To plan and solve engineering problems in the ICT with initiative, making decisions and with creativity. To develop a method of analysis and problem solving in a systematic and creative way.

12 CPE N1. They will be able to identify, formulate and solve engineering problems in the ICC field and will know how to develop a method for analysing and solving problems that is systematic, critical and creative.

08 CRPE N1. ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS Level 1. To identify the complexity of the problems presented in the subjects. To set out correctly the problem correctly from the statements suggested. To identify the possible options for its resolution. To choose an option, apply it and to identify the need to change it in case of fail. To provide tools and methods to test whether the solution is correct or at least consistent. To identify the role of creativity in science and technology.

12 CPE N2. They will be able to identify, formulate and solve engineering problems in the ICC field and will know how to develop a method for analysing and solving problems that is systematic, critical and creative.

12 CPE N3. They will be able to identify, formulate and solve engineering problems in the ICC field and will know how to develop a method for analysing and solving problems that is systematic, critical and creative.

08 CRPE N3. ABILITY TO IDENTIFY, FORMULATE AND SOLVE ENGINEERING PROBLEMS Level 3. To identify and model complex systems. To identify methods and tools appropriate to pose the equations and descriptions associated with the models and to solve them. To carry out qualitative analysis and approaches. To determine the uncertainty of the results. To formulate hypotheses and experimental methods to validate them. To set up and manage undertakings. To identify major components and establish priorities. To develop critical thinking.

09 CSCT N2. ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. Level 2. To identify the user needs and to develop a definition of product, process or service and its initial specifications. To prepare a specification of the design process. To design and follow a management model of the design process based on a standard. To know the steps associated with the phases of design, implementation and operation. To consistently use the knowledge and tools acquired in different subjects in the process of design and implementation. To evaluate and propose improvements to the design. To evaluate the implementation of legislation, rules and regulations of telecommunications at a national, European and international level.

09 CSCT. ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. To cover the complete life cycle (conception, design, implementation and operation) of a product, process, system or service in the field of ICT. This involves the writing and development of projects in the field of the expertise chosen, knowledge of the basic subjects and technologies, decision making, managing the activities object of the projects, the measurements, calculations and evaluations, handling specifications, standards and regulations must be complied with, assessing social and environmental impact of the technical solutions adopted, and assessing economic, material and human resources involved in the project, with a systemic and integrative headway.

09 CSCT N1. ABILITY TO CONCEIVE, DESIGN, IMPLEMENT AND OPERATE COMPLEX ICT SYSTEMS. Level 1. To identify the processes involved in the life cycle of a product, process or service and the functions of engineering. To assess the need for a systematic design process. To identify and perform the steps of a product design specification document (PDS). To complete and improve planning and specification documents. To apply a systematic design process in the stages of implementation and operation. To prepare progress reports of a design process. To handle support tools for project management. To prepare a final report for a simple design process. To understand the basic economic aspects associated with the product, process or service that is being designed.

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:**

01 EIN N2. 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.
06 URI N1. EFFECTIVE USE OF INFORMATION RESOURCES - Level 1. Identifying information needs. Using collections, premises and services that are available for designing and executing simple searches that are suited to the topic.

06 URI N2. 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.

06 URI N3. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

07 AAT N2. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

04 COE N1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.

04 COE N2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.

01 EIN. ENTREPRENEURSHIP AND INNOVATION: Knowing about and understanding how businesses are run and the sciences that govern their activity. Having the ability to understand labor laws and how planning, industrial and marketing strategies, quality and profits relate to each other.

04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.

02 SCS. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and economic phenomena that characterize the welfare society. Having the ability to relate welfare to globalization and sustainability. Being able to make a balanced use of techniques, technology, the economy and sustainability.


02 SCS N1. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world's situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human development. Recognizing the social and environmental implications of a particular professional activity.

02 SCS N2. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 2. Applying sustainability criteria and professional codes of conduct in the design and assessment of technological solutions.

05 TEQ. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.

01 EIN N1. ENTREPRENEURSHIP AND INNOVATION - Level 1. Showing enterprise, acquiring basic knowledge about organizations and becoming familiar with the tools and techniques for generating ideas and managing organizations that make it possible to solve known problems and create opportunities.

02 SCS N3. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.

05 TEQ N1. TEAMWORK - Level 1. Working in a team and making positive contributions once the aims and group and individual responsibilities have been defined. Reaching joint decisions on the strategy to be followed.

04 COE. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.

05 TEQ N3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

07 AAT N1. SELF-DIRECTED LEARNING - Level 1. Completing set tasks within established deadlines. Working with recommended information sources according to the guidelines set by lecturers.

07 AAT N3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most
Students will achieve the ability to analyze and understand the transversal and strategic role of telecommunications in the current socio-economic environment, as well as the role played in that environment by the Telecommunication Engineer and ICT technological expert.

Students will acquire knowledge of how the sector is structured, how it is created and adds value, the possibilities of ICT technologies, and how legal and administrative tools are managed and applied in different national and supranational contexts:

- The potential of the ICT sector, the new services and their socio-economic impact, new jobs and trades, ...  
- The importance of infrastructures, services, applications and content.
- The reasons for the competition, the specific strategies and characteristics of the telecommunications business and the political and economic implications of the plans for the enhancement, development and use of Information and Communication Technologies and Audiovisuals.
- Knowledge of legal and administrative procedures, within the EU.
- Understanding, in a globalized free market environment, the complexity of the operation of Telecommunication services.
- Understanding of the legal and economic vocabulary of the telecommunications business.

### Teaching methodology

Interactive class: presentation of the teacher with projection of transparencies, and open discussion.  
Expert Conferences  
Videos about certain topics.

### Learning objectives of the subject

Students will achieve the ability to analyze and understand the transversal and strategic role of telecommunications in the current socio-economic environment, as well as the role played in that environment by the Telecommunication Engineer and ICT technological expert. Students will acquire knowledge of how the sector is structured, how it is created and adds value, the possibilities of ICT technologies, and how legal and administrative tools are managed and applied in different national and supranational contexts:

- The potential of the ICT sector, the new services and their socio-economic impact, new jobs and trades, ...  
- The importance of infrastructures, services, applications and content.
- The reasons for the competition, the specific strategies and characteristics of the telecommunications business and the political and economic implications of the plans for the enhancement, development and use of Information and Communication Technologies and Audiovisuals.
- Knowledge of legal and administrative procedures, within the EU.
- Understanding, in a globalized free market environment, the complexity of the operation of Telecommunication services.
- Understanding of the legal and economic vocabulary of the telecommunications business.

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>52h</th>
<th>34.67%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>98h</td>
<td>65.33%</td>
</tr>
</tbody>
</table>
## Content

<table>
<thead>
<tr>
<th>1. Telecommunications. Situation and prospective.</th>
<th><strong>Learning time:</strong> 24h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 10h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 4h</td>
</tr>
<tr>
<td></td>
<td>Self study: 10h</td>
</tr>
</tbody>
</table>

### Description:

1. Telecom. situation and outlook. The Information Society
   - Summary of the historical development of Telecom.
   - The role of engineering and engineers.
   - Method of engineering performance.
   - Technological convergence, service convergence, convergence of uses.
   - Internet and IP services.
   - Next Generation Networks.
   - The concept of Network Neutrality
   - Current market situation of telecommunications, data and statistics.
   - Social and economic impact.

### Related activities:

Two Analytical Works on the Information Society, indicators and projections

### Specific objectives:

Take a general ICT sector look from different points of view: historical, technological, economic and social. View the role of engineering and engineers in social and economic developments. Have a knowledge of the current ICT sector and its future potential.
# 2. The Telecommunication Business.

**Learning time:** 24h  
Theory classes: 12h  
Self study : 12h

<table>
<thead>
<tr>
<th>Description:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- ICT Liberalization, Competition and Regulation developments in the EU and Spain</td>
<td></td>
</tr>
<tr>
<td>- A market economy. The EU Treaty</td>
<td></td>
</tr>
<tr>
<td>- The European Union: the EU treaties, Configuration of administrative bodies and institutions.</td>
<td></td>
</tr>
<tr>
<td>- Telecommunications, Electronic Communications, Broadcasting and Information Society in the EU.</td>
<td></td>
</tr>
<tr>
<td>- The networks, development and prospective.</td>
<td></td>
</tr>
<tr>
<td>- The Next Generation Networks (NGN).</td>
<td></td>
</tr>
<tr>
<td>- The Internet of Things (IoT)</td>
<td></td>
</tr>
<tr>
<td>- The Digital Identity.</td>
<td></td>
</tr>
<tr>
<td>- The broadband.</td>
<td></td>
</tr>
<tr>
<td>- The cloud.</td>
<td></td>
</tr>
<tr>
<td>- ICT sector Business data.</td>
<td></td>
</tr>
<tr>
<td>- The ICT economic and social impact.</td>
<td></td>
</tr>
</tbody>
</table>

**Related activities:**  
- A Socio-economic analysis work on the World Digital Market, sectors and countries.  
- A work on the European Digital Agenda.

**Specific objectives:**  
- Understanding how the EU is set to an economic sector of telecommunications competition.  
- Understanding of how ICT technologies and techniques have been developed and deployed to provide a range of services, such as its future evolution.  
- The presentation of the latest business figures in the ICT sector and its social and economic impact.
3. The Audiovisual and Multimedia sector

<table>
<thead>
<tr>
<th>Description:</th>
</tr>
</thead>
</table>
| The Audiovisual and Multimedia  
- Television: types and systems  
- EU Directive 1989 Television without Frontiers  
- The Broadcasting Councils  
- Audiovisuals Business Models  
- Value chain. Production and supply. Exclusive rights  
- Spanish Public TV Financing.  
- HBB TV and Over the Top  
- Services packages offers.  
- Business content providers.  
- Data consumption of audiovisual content.  
- The Radio.  
- The press  
- The film industry.  
- The business of music.  
- Audiovisual equipment.  
- Video games.  
- Bets "on-line". |

<table>
<thead>
<tr>
<th>Related activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design of a service or application to distribute content.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific objectives:</th>
</tr>
</thead>
</table>
| Understanding of the Audiovisual and Multimedia sector. Distribution systems, content, production behaviours and main business groups  
Knowledge of the legal concepts that apply to the content sector.  
The chain value and the business associated with the contents in their different forms of provision: TV, radio, press.  
Knowledge of the new contents: music, video games, on-line bets etc., their distribution and provision. |
### 4. Regulation

<table>
<thead>
<tr>
<th>Learning time: 16h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 8h</td>
</tr>
<tr>
<td>Self study: 8h</td>
</tr>
</tbody>
</table>

**Description:**
- The EU telecommunications policy.
- Hierarchy of norms and legislation concepts.
- The concept of regulation: origins and foundations.
- The EU regulatory framework, Guidelines and Recommendations. The national regulatory authorities NRA.
- The ICT Industry regulation in the EU and the USA.
- The Spain ICT regulation.
- Aspects keys Regulation: Operators with SMP (significant position in the market), Universal Service Guarantee (SU), regulatory bodies, restrictions or limitations, spectrum and numbering management.
- Principis of Competition Law
- Identification and Market Analysis
- Regulators the ICT sector in Spain. The former CMT (Telecommunications Market Commission) and current CNMC (National Commission of Market and Competition)
- Regulatory instruments; Access concept, direct, indirect. Preselection. The Numbering, Portability, conservation of number. The interconnection, roaming (roaming), the Interconnection Reference Offer Offer? S Reference Interconnection (OIR), the Unbundled Local Loop (ULA), other regulated offers.
- Sharing Infrastructures
- Regulació of new generation networks and services

**Specific objectives:**
- Understanding of the concepts underlying legal and economic regulation of markets.
- Acquiring knowledge of Spanish and European regulations that apply to the ICT sector.
- The presentation of the main regulatory instruments could be used in the regulation of ICT.
5. **Spectrum management, mobile telephony.**

<table>
<thead>
<tr>
<th>Learning time: 8h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 4h</td>
</tr>
<tr>
<td>Self study: 4h</td>
</tr>
</tbody>
</table>

**Description:**
- Radio Spectrum (RS) Definitions.
- Radio Spectrum International Management Authorities.
- Objectives of the RS management.
- RS managing tools.
- RS Common Uses.
- RS Specific Uses, licenses.
- The national attribution frequencies table (CNAF).
- Mobile Communications and Digital Terrestrial Television (DTT).
- Limitations of the current model of RS management.
- RS Secondary Market
- The so-called "digital dividend"
- RS uses and health.
- The RS and Broadband regulation policies in the EU.

**Specific objectives:**
To get knowledge about how the radio spectrum is managed, its different types of use, the forms of granting and the new possibilities of use and granting offered by the technology (secondary spectrum market).
To illustrate about the services that require the use of the radio spectrum, the advantages of mobility against the available bandwidth.
Presentation of the whole thematic on mobile telephony and health, state of the matter.

6. **The Universal Telecommunication Service**

<table>
<thead>
<tr>
<th>Learning time: 4h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 2h</td>
</tr>
<tr>
<td>Self study: 2h</td>
</tr>
</tbody>
</table>

**Description:**
- European Directives on the Universal Service of Telecommunications and Users' Rights.
- Legal and economic foundations of the Universal Service concept. Origins and principles of the US.
- The universal voice and data service
- Methodology for calculating the cost of the US
- Evaluation of intangibles, effects on competition
- European Comparison of Universal Service
- The role of the Regulator in the US.
- Proposal of a new US model.

**Specific objectives:**
To understand, in basis on the users rights, the existence reasons for an universal telecommunications service.
The European Directives supporting the Universal Telecommunications Service.
The presentation of new models of the US, Which allow their provision in competition.
The generalization of the concept of the US to other economic sectors.
The evaluation is achieved through a combination of different aspects of teaching: works and designs made in class, work done at home, designs, presentations and discussions in class. The different jobs can be done individually or as a team.

### Qualification system

The evaluation is achieved through a combination of different aspects of teaching: works and designs made in class, work done at home, designs, presentations and discussions in class. The different jobs can be done individually or as a team.

### Regulations for carrying out activities

2 Analysis work on the Information Society, indicators and projections. Work in groups to be done in class (10% each).

2 Socio-economic analysis of the World Digital Market. sectors and countries, and the European Digital Agenda. Individual work to be done in class (20% each).

Design laboratories on vertical sectors. Smart Cities, IoT, Mobility and connected car, Big data, Blockchain, etc. Practical sessions: conference or video of an expert, approach case study, design group solution (10%).

1 Work on current aspects of the ICT sector. Work to be done in group, at home, and with presentation in class (20%)

Participation in discussions in class sessions and attendance (10%)

### Bibliography

**Basic:**


**Complementary:**


Informes i memòries anyals de la CMT, CNMC, INI i ONTSI.

Informes i estudis de: OCDE, OFTEL, CISCO, ACCENTURE, IBM, ADTEL, TELEFÓNICA, VODAFONE, ORANGE, DELOITTE, PWC, Etc...

**Others resources:**

**Audiovisual material**

**Ordenador, proyector y pantalla**

Computer, projector and screen