# Course guides
# 300304 - IS-OAT - Social Impact

**Last modified:** 27/05/2019

**Unit in charge:** Castelldefels School of Telecommunications and Aerospace Engineering
**Teaching unit:** 707 - ESAII - Department of Automatic Control.

**Degree:** BACHELOR'S DEGREE IN AIR NAVIGATION ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN AIRPORT ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN AEROSPACE SYSTEMS ENGINEERING (Syllabus 2015). (Optional subject).

**Academic year:** 2019 **ECTS Credits:** 6.0 **Languages:** English

## LECTURER

**Coordinating lecturer:** Definit a la infoweb de l'assignatura.

**Others:** Definit a la infoweb de l'assignatura.

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

**Specific:**
CE22 AERON. CE 22 AERON. Conocimiento adecuado y aplicado a la Ingeniería de: Los fundamentos de sostenibilidad, mantenibilidad y operatividad de los sistemas de navegación aérea. (CIN/308/2009, BOE 18.2.2009)

**Transversal:**
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.
05 TEQ N2. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
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.
03 TLG. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.
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.
06 URI N3. EFFECTIVE USE OF INFORMATI0N 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.
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.
06 URI N2. EFFECTIVE USE OF INFORMATI0N 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.
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.
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.
06 URI N1. EFFECTIVE USE OF INFORMATI0N 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.
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.
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.
06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

## TEACHING METHODOLOGY

## LEARNING OBJECTIVES OF THE SUBJECT

1) Retrieving the relationship among Science, its application (Engineering) and Society2) Fostering the critic, rational, OBJECTIVE and proactive attitudes in the students3) Observing the past and present evolution of our society4) Knowing the current globalization process5) Understanding some characteristics of complex systems, singularly ecological and social ones6) Knowing and applying the concept of sustainable development7) The 10 most wanted abilities in engineers by employers:7.1 Ability to solve complex problems7.2 Learning capability7.3 Responsibility assumption7.4 Ethical commitment7.5 Team work7.6 Information search and use7.7 Adaptability7.8 Communication capability7.9 Proactive attitude7.10 Planning ability

## STUDY LOAD

| Type | Hours | Percentage |
|---|---|---|
| Hours large group | 21,5 | 14.09 |
| Hours medium group | 41,5 | 27.52 |
| Self study | 84 | 56.38 |
| Guided activities | 3 | 2.01 |

**Total learning time:** 149 h

## CONTENTS

### Science and Evolution

**Description:**
1.1 Definitions. The scientific method1.2 Science as a fruit of society1.3 Science as a tool 1.4 Other types of knowledge1.5 Science and complexity levels

**Related activities:**
Exercises 1 - scientific methodWork 1 - critical search of informationExercises 2 - natural evolutionExercises 3 - social evolutionWork 2 - probabilistic reasoningExercises 2 - probabilistic reasoningWork 3 - applied engineeringExercises 5 - applied engineeringWork 4 - art and religionExercises 6 - art and religion

**Full-or-part-time:** 47 h
Practical classes: 20h
Guided activities: 1h
Self study : 26h 27m

### Cooperation

**Description:**
2.1 Reasons not to mistreat the others2.2 The Game of Cooperation and Desertion2.3 Negotiation2.4 Human rights2.5 Manipulating dissatisfaction2.6 The welfare State2.7 The problems of globalization

**Related activities:**
Work 5 - strategy for Cooperation and DesertionExercises 7 - irrationality Exercises 8 - cooperationWork 6 - education and terrorismWork 7 - startegy cooperation and desertion with uncertaintyExercises 9 - globalizationPartial exam

**Full-or-part-time:** 50 h
Practical classes: 21h 30m
Guided activities: 1h
Self study : 28h 21m

### Complexity

**Description:**
3.1 Reductionism, systemic approach and complex systems3.2 Linear and nonlinear behavior3.3 Deterministic chaos3.4 Chaotic life3.5 Networks3.6 Sustainable Development3.7 Technology as a problem3.8 Saving the planet? (Final reflections)

**Related activities:**
Work 8 - simulations of complex systemsExercises 10 - complexityWork 9 - simulation of system dynamicsWork 10 - simulation of social agentsExercises 11 - Sustainable DevelopmentWork 11 - debateFinal Exam

**Full-or-part-time:** 51 h
Theory classes: 21h 30m
Guided activities: 1h
Self study : 29h 12m

## GRADING SYSTEM