Course guides
230053 - ANTENES - Antennas

Last modified: 29/04/2020

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.

Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010). (Compulsory subject).
BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject).

Academic year: 2020 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: -Blanch Boris, Sebastia

Others: Blanch Boris, Sebastia

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Generical:
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.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours small group	13,0	8.67
Self study	85,0	56.67
Hours large group	52,0	34.67

Total learning time: 150 h

CONTENTS

(ENG) Tema 0. Course presentation

Description:
Course introduction

Full-or-part-time: 1h
Theory classes: 1h

(ENG) Tema 1. Radiation fundamentals.

Description:
Introduction. Maxwell equations. General expressions of the fields. Approaches to large distances. The vector of radiation. Fresnel and Fraunhofer zones.

Full-or-part-time: 15h 20m
Theory classes: 5h
Laboratory classes: 2h
Self study : 8h 20m

(ENG) Tema 2.Analysis of basic antennas.

Description:
Introduction. Elementary antennas (dipoles and loops). Cylindrical antennas. Monopoles. Reciprocity theorem and applications. Selfimpedance and mutual impedance. Baluns.

Full-or-part-time: 49h
Theory classes: 18h
Laboratory classes: 1h
Self study : 30h

(ENG) Tema 3. Antenna arrays.

Description:
Introducction. Array factor. Array analysis. Planar arrays. Array synthesis.

Full-or-part-time: 40h 20m
Theory classes: 14h
Laboratory classes: 3h
Self study : 23h 20m

(ENG) Tema 4. Aperture antennas

Description:
Introduction. Equivalence theorem. Planar apertures. Horns. Slots. Parabolic reflectors.

Full-or-part-time: 39h 20m
Theory classes: 14h
Laboratory classes: 2h
Self study : 23h 20m

ACTIVITIES

(ENG) Proves de resposta curta (Control)

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(ENG) Altres activitats

(ENG) Pràctica de laboratori

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(ENG) Pràctica de laboratori

(ENG) Proves de resposta llarga (Examen Final)

GRADING SYSTEM

The evaluation is done using two controls with a 15% weight each, 10% of practices and a final exam with a 60% weight

This course will assess generic skills:
- Ability to identify, formulate and solve engineering problems (Middle Level)
- Knowledge of and experimentation? Instruments and tools (Middle Level)The evaluation is done using two controls with a 15% weight each, 10% of practices and a final exam with a 60% weight

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- Ability to identify, formulate and solve engineering problems (Middle Level)
- Knowledge of and experimentation instruments and tools (Middle Level)

BIBLIOGRAPHY

Basic:

- Cardama, Á. [et al.]. Antenas [on line]. 2a ed. Barcelona: Edicions UPC, 2002 [Consultation: 09/02/2015]. Available on: http://hdl.handle.net/2099.3/36797. ISBN 8483016257.