

230053 - ANTENES - Antennas

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
 Teaching unit: 739 - TSC - Department of Signal Theory and Communications
 Academic year: 2019
 Degree: BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2010).
 (Teaching unit Compulsory)
 BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING
 (Syllabus 2015). (Teaching unit Optional)
 ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: -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.

Learning objectives of the subject

Study load

Total learning time: 150h	Hours large group:	52h	34.67%
	Hours small group:	13h	8.67%
	Self study:	85h	56.67%

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Content

(ENG) Tema 0. Course presentation	Learning time: 1h Theory classes: 1h
Description: Course introduction	
(ENG) Tema 1. Radiation fundamentals.	Learning time: 15h 20m Theory classes: 5h Laboratory classes: 2h Self study : 8h 20m
Description: Introduction. Maxwell equations. General expressions of the fields. Approaches to large distances. The vector of radiation. Fresnel and Fraunhofer zones.	
(ENG) Tema 2. Analysis of basic antennas.	Learning time: 49h Theory classes: 18h Laboratory classes: 1h Self study : 30h
Description: Introduction. Elementary antennas (dipoles and loops). Cylindrical antennas. Monopoles. Reciprocity theorem and applications. Selfimpedance and mutual impedance. Baluns.	
(ENG) Tema 3. Antenna arrays.	Learning time: 40h 20m Theory classes: 14h Laboratory classes: 3h Self study : 23h 20m
Description: Introduction. Array factor. Array analysis. Planar arrays. Array synthesis.	

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(ENG) Tema 4. Aperture antennas	Learning time: 39h 20m Theory classes: 14h Laboratory classes: 2h Self study : 23h 20m
Description: Introduction. Equivalence theorem. Planar apertures. Horns. Slots. Parabolic reflectors.	

Planning of activities

(ENG) Proves de resposta curta (Control)
(ENG) Proves de resposta curta (Control)
(ENG) Altres activitats
(ENG) Pràctica de laboratori
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(ENG) Pràctica de laboratori
(ENG) Pràctica de laboratori
(ENG) Proves de resposta llarga (Examen Final)

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Qualification 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

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)

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.