

## 30340 - Transfer Equipment and Systems

### Información del Plan Docente

<b>Academic Year</b>	2016/17
<b>Academic center</b>	110 - Escuela de Ingeniería y Arquitectura
<b>Degree</b>	438 - Bachelor's Degree in Telecommunications Technology and Services Engineering
<b>ECTS</b>	6.0
<b>Course</b>	4
<b>Period</b>	First semester
<b>Subject Type</b>	
<b>Module</b>	---

### **1.Basic info**

#### **1.1.Recommendations to take this course**

#### **1.2.Activities and key dates for the course**

### **2.Initiation**

#### **2.1.Learning outcomes that define the subject**

#### **2.2.Introduction**

### **3.Context and competences**

#### **3.1.Goals**

#### **3.2.Context and meaning of the subject in the degree**

#### **3.3.Competences**

#### **3.4.Importance of learning outcomes**

### **4.Evaluation**

### **5.Activities and resources**

#### **5.1.General methodological presentation**

The Learning planning which concerns the teaching methodology in this course is based on the following:

1. Lectures. - Teacher presentation or explanation in class (with possible proofs and demos).

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2. Based problem Learning and assignments.-Oriented approach so that the students learn by means of real problems in small groups under tutor supervision.
3. Laboratory.- Activities in special spaces with specialized equipment (laboratory, computer rooms).
- 4 Theoretical works. Preparation of seminars, lectures, research papers, reports, etc. to be presented or delivered in class.
5. Grading.-Set of written, oral tests, practices, projects, jobs, etc. used to assess the student skills.
6. Personal Assessment- tutor meetings to review and discuss the materials and topics presented in lectures.

### 5.2.Learning activities

1. Class Lectures (40 hours) in which the theoretical foundations of the contents of the subject are presented and where student participation is encouraged.
2. Problems and case studies (10 hours) in which problem solving and practical cases are held.
3. Laboratory Practice (10 hours) in which students will perform 5 Lab sessions of 2 hours.
4. Practical group work, supervised by the teacher, based on the course contents and public presentations.
5. Personalized assessment to students through individual meetings.

### 5.3.Program

#### 1.Radio Frequency Allocation

##### 1.1 Radio spectrum Regulation.

##### 1.2 Frequency Allocation.

#### 2. Review of Electromagnetic radiation principles.

##### 2.1 Fields for electric and magnetic current sources.

##### 2.2 Uniqueness and volume equivalence theorems

##### 2.3 Electric and Magnetic Fields for Electric and Magnetic Current Sources.

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### 3. Aperture Antennas and Broadband Antenna Analysis

#### 3.1 Aperture Antennas

#### 3.2 Slots Antennas.

#### 3.3 Horn Antennas

#### 3.4 Parabolic Reflector Antennas

#### 3.5 Broadband Antennas

### 4. Antenna array synthesis.

#### 4.1 Array analysis review.

#### 4.2 Array synthesis.

##### 4.2.1 Fourier transform method.

##### 4.2.2 Chebyshev transform method.

#### 4.3 Feeding networks and case studies the telecommunication field.

### 5. Basic Radio Transmission Systems.

#### 5.1 Transmitters

#### 5.2 Receivers

#### 5.3 Transmodulators (Gap Fillers)

#### 5.4 Transponders.

### Laboratory Practices

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Laboratory Practice 1. Rectangular and circular aperture radiation parameters.

Laboratory Practice 2. Horn antenna radiation parameters.

Laboratory Practice 3. Parabolic Reflector radiation parameters.

Laboratory Practice 4. Array Synthesis I.

Laboratory Practice 5. Array Synthesis II.

### Supervised Projects and Seminars

Student Project which deals with the design and development of supervised assessments and their presentation as a workshop.

### 5.4.Planning and scheduling

The following distribution of activities throughout the semester are scheduled:

- Weekly sessions of lectures, which include problem solving sessions that cover a total of 50 hours.
- 5 2-hour Lab sessions in small groups which are held in the High Frequency Laboratory (L3.06).
- Personal Assessment meetings are flexible and agreed for convenience between students and professor.

Problem Lectures and laboratory sessions are held according to the schedule set by University. Timetables will be announced on the EINA website.

As far as grading is concerned, partial (midterm) written examination dates will be announced by the university and be carried out in two parts, at mid-course and at the end of the course. It will be announced in advance.

Related Final examination shall be proposed by University.

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### 5.5. Bibliography and recommended resources