

## 60814 - Electric power systems

### Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	532 - Master's in Industrial Engineering
ECTS	6.0
Course	1
Period	First semester
Subject Type	Optional
Module	---

### 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 course is developed in several aspects, on one hand mainly through classroom sessions (sessions/classes of theory-problems) and on the other hand by practical sessions of laboratory. It can also include other activities

#### 5.2. Learning activities

In the classroom sessions, fundamental concepts are presented applied to practical exercises which help to understand these concepts. The corresponding methodology is principally based on lectures.

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The practical sessions are conducted by laboratory experiments, including practical exercises to be solved by computer, where the analyzed practical situations are often more complex than those studied in the classroom sessions. It also can allow to deal with a more extensive analysis.

Other evaluable activities can include written partial exams, problems to be solved, practical works or other activities.

### 5.3.Program

The contents of the classroom sessions are structured on two thematic blocks:

- Electric power lines. Electric parameters. Steady-state operation of power lines.
- Electric power systems. Normal operating state of the power system. Power system transients.

The contents of the practical sessions of laboratory, as well as other activities, will be related to the classroom sessions

### 5.4.Planning and scheduling

The course will be held in the weeks corresponding to the first semester of the academic year. During such semester, the activities will be distributed as follows:

- 3 hours per week of classroom sessions.
- 5 practical sessions of laboratory within the set of weeks scheduled for this kind of sessions by the academic center. Each session will have an approximate extension of three hours.

### 5.5.Bibliography and recommended resources

(BB) Ramírez, I.J., et. al., Problemas resueltos de Sistemas de Energía Eléctrica, Ed. Thomson.

(BB) Grainger, J.J. and Jr. Stevenson, Power system analysis, Ed. McGraw-Hill

(BB) Glover, J.D., T. Overbye, and M.S. Sarma, Power System Analysis and Design, Ed. Cengage Learning.

(BC) Gómez-Exposito, A., et. al., Análisis y Operación de Sistemas de Energía Eléctrica, Ed. McGraw-Hill.

(BB) basic bibliography

(BC) complementary bibliography