

## 30023 - Electrical Power Systems

### Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	436 - Bachelor's Degree in Industrial Engineering Technology
ECTS	6.0
Year	3
Semester	First semester
Subject Type	Compulsory
Module	---

### **1.General information**

#### **1.1.Introduction**

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

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

### **4.Assessment (1st and 2nd call)**

#### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

The course takes place in various aspects, mainly through classroom sessions (sessions/classes of theory-problems) and practical sessions of laboratory; it can also include other activities.

#### **5.2.Learning tasks**

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The classroom sessions contain fundamental concepts that are applied to practical exercises, which help to understand those concepts. Primarily the methodology consists of lectures.

The practical sessions contain laboratory experiments, including computer practices, 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.Syllabus

The contents of the classroom sessions are structured in the following sections:

- I.- Main components of electric power systems.
- II.- Electric power lines.
- III.- Electric parameters of lines.
- IV.- Steady-state analysis of electric lines.
- V.- Power flows in electric power systems.
- VI.- Faults in electric power systems. Transient stability.

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

The practical sessions are structured in the following sections:

- A.- sessions to study electric power lines (two sessions).
- B.- session to study electric power systems in steady state (one session).
- C.- sessions to study electric power systems in transient states (two sessions).

### 5.4.Course planning and calendar

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:

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- 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

- Ramírez, I.J., et. al., Problemas resueltos de Sistemas de Energía Eléctrica, Ed. Thomson.
- Glover, J.D., T. Overbye, and M.S. Sarma, Power System Analysis and Design, Ed. Cengage Learning.
- Grainger, J.J. and Jr. Stevenson, Power system analysis, Ed. McGraw-Hill
- Gómez-Exposito, A., et. al., Análisis y Operación de Sistemas de Energía Eléctrica, Ed. McGraw-Hill.