

Academic Year: ( 2020 / 2021 )

Review date: 21-04-2016

Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: LEDESMA LARREA, PABLO

Type: Electives ECTS Credits : 6.0

Year : Semester : 2

**REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)**

Fundamentals of Electrical Engineering

**OBJECTIVES**

The student will be able to:

- Explain the differences between a electromagnetic transients program and a electromechanical transients program
- Explain the scope of the power system analysis software tool PSS/E
- Enumerate the data needed to solve a power flow
- Use these data to solve a power flow in PSS/E
- Perform a contingency analysis in PSS/E
- Perform a voltage stability analysis in PSS/E
- Perform an optimal power flow in PSS/E
- Enumerate the data needed to simulate a severe perturbation in a power system
- Use these data to execute a dynamic simulation in PSS/E
- Extract relevant information from the output of a dynamic simulation
- Perform these tasks in PSS/E automatically

**DESCRIPTION OF CONTENTS: PROGRAMME**

- Electromagnetic transient simulation
- Power flow
- Contingency analysis
- Economic dispatch
- Voltage stability
- Optimal power flow
- Electromechanical transient simulation
- Synchronous generator models
- Protections

**LEARNING ACTIVITIES AND METHODOLOGY**

Classroom sessions, in which the teacher will explain the theoretical contents.

Practical sessions in a computer room. The student will use software tools commonly used by the electric utilities, specially PSS/E. The student will apply the theoretical concepts to practical examples.

**ASSESSMENT SYSTEM**The continuous assessment mark is  $A \cdot T$ , where

A is the attendance mark

T is the mark of the works performed along the course.

If the grade obtained in the continuous assessment is equal or more than 6 over 10, then it is not necessary to do the end-of-term examination. In this case, the final grade will be that of the continuous assessment.

<b>% end-of-term-examination:</b>	60
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	40

## BASIC BIBLIOGRAPHY

- Grainger, Stevenson Power System Analysis, McGraw-Hill.