

New Technologies of Renewable energy power plants

Academic Year: (2022 / 2023)

Review date: 23-05-2022

Department assigned to the subject: Thermal and Fluids Engineering Department

Coordinating teacher: SORIA VERDUGO, ANTONIO

Type: Compulsory ECTS Credits : 4.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

- Thermodynamics
- Heat Transfer

OBJECTIVES

Competences acquired by the students:

- Capability of analyzing the different processes occurring in a power station based on renewable energy.
- Capability of designing a power station based on renewable energy.
- Capability of evaluating the performance of a power station based on renewable energy.

Learning results acquired by the students:

The student should be capable of designing and evaluating the performance of different types of power stations based on renewable energies.

DESCRIPTION OF CONTENTS: PROGRAMME

- Fundamentals of chemical thermodynamics.
- Power cycles used in power plants (Brayton, Rankine, Combined cycle)
- Biomass.
- Solar thermal energy for electricity generation.
- Geothermal energy.

LEARNING ACTIVITIES AND METHODOLOGY

- Lectures, where the concepts to be acquired by the student will be presented. The student will receive the notes of the lecture prior to the class.
- Problems solving by the students

ASSESSMENT SYSTEM

% end-of-term-examination:	0
% of continuous assessment (assignments, laboratory, practicals...):	100

The evaluation of the course is carried out in continuous evaluation, leaving the final exam as a recovery for those who, could not take the partial exam and / or did not pass it.

Partial exam 50%.

Individual or pair work 50%.

BASIC BIBLIOGRAPHY

- José Antonio Carta González, Roque Calero Pérez, Antonio Colmenar Santos, Manuel-Alonso Castro Gil Centrales de energías renovables : generación eléctrica con energías renovables, Pearson, 2009
- M.J. Moran, H.N.Saphiro Fundamentals of Engineering Thermodynamics, John Wiley & Sons, 2006
- P. K. Nag Power plant engineering, Tata McGraw-Hill Education,, 2002