

COURSE NAME

Name: **ENERGETIC AND HIDROELECTRIC SYSTEM**

Code: 101151

Curriculum: **DEGREE IN CIVIL ENGINEERING**

Year: 3

Subject: DESIGN AND MANAGEMENT OF HYDRAULIC AND HYDROELECTRIC SYSTEMS

Nature: OBRIGATORY Duration: SECOND SEMESTER

ECTS Credits: 6

Classroom hours: 60

Face-to-face classroom percentage: 40%

Non-contact hours: 90

FACULTY DETAILS

Name: LINARES TORRALBO, JAIME (Coordinator)

Department: AGRONOMY

Area: HYDRAULIC ENGINEERING

Location of the office: EPS Belmez

E-Mail: jlinares@uco.es

Phone number: +34610701442

SKILLS

- CB1 Have and understand specific knowledge of the field of study of mining engineering.
- CB2 Have and understand current and cutting-edge knowledge of the field of mining engineering.
- CB3 Be able to apply the knowledge acquired in professional contexts and to elaborate and defend arguments in the field of knowledge of mining engineering.
- CB6 Convey information, ideas, problems and solutions to both specialist and non-specialist audiences.
- CB7 Possess the learning skills necessary to undertake studies with a high degree of autonomy.
- CU2 Know and refine the user level of ITs.
- CU3 Promote active job search habits and entrepreneurship skills.
- CEH1 Knowledge of and ability to design and dimension hydraulic works and facilities, energy systems, hydroelectric facilities, and the planning and management of surface and groundwater hydraulic resources.

OBJECTIVES

Understand and acquire the ability to design and dimension hydroelectric systems.

CONTENTS:

1. Theoretical contents

- TOPIC 1. THE SPANISH ENERGY SYSTEM
- TOPIC 2. POTENTIAL AND ENERGY USE OF BASINS AND RIVERS.
- TOPIC 3. TYPOLOGY AND LAYOUT OF HYDROELECTRIC POWER PLANTS.
- TOPIC 4. INTAKE WORKS. PIPEWORK. SURGE TANKS.
- TOPIC 5. TURBINES. ALTERNATORS.
- TOPIC 6. REGULATION AND CONTROL SYSTEMS.
- TOPIC 7. AUXILIARY EQUIPMENT AND SYSTEMS.
- TOPIC 8. OPERATION OF HYDROELECTRIC SYSTEMS.

2. Practical contents.

Spreadsheet exercises to solve problems associated with hydroelectric systems.
Search, diagnosis, programming and analysis of the results of different problems and/or relevant concepts in the design and sizing of hydroelectric infrastructures.