Universidad de Navarra

Gestión energética y ecoeficiencia (F. Ciencias)

Guía docente 2026-27

INTRODUCTION

Breve descripción: **In this course the essential concepts of energy management and eco-efficiency required for a degree in Environmental Sciences or Biology will be acquired. Special attention will be primarily paid to energy efficiency and renewable energies, as well as to concepts related with energy decarbonization and energy sustainability.**

- **Titulación**: doble grado de Biología y CC. Ambientales
- **Módulo/Materia**: Energy Management and Eco-efficiency
- **ECTS**: 6
- **Curso, semestre**: 4º/2º semestre
- **Carácter**: Obligatoria
- **Profesorado**: Eduardo Ryan
- **Idioma**: Inglés
- **Aula, Horario**: Lunes 17:00-19:00 y miércoles 17:00-19:00 (consultar calendario de coordinación)

RESULTADOS DE APRENDIZAJE (Competencias)

- CG2 Think in an integrated manner and approach problems from different perspectives
- CG3 Critical thinking.
- CG4 Team work.
- CG5 Foster awareness and respect for the environment and the ecosystem.
- CG6 Information management.
- CG7 Communicate in writing and orally regarding environmental issues, with an adequate style and proper linguistic approach for the situation and audience.
- CE22 Human impact on the environment.
- CE23 Analysis of side effects of the use of sustainable resources.
- CE 25 Set up an environmental model management
- CE 26 Energy technology management through ecoefficiency improvement.
- CE28 Plan a quality management system based on national and international main regulations.
- CE 32 Key performance indicators of sustainability and ecological footprint.
- CB3 Students have the ability to gather and interpret relevant data (usually within this field of study) to inform judgments that include reflection on relevant social, scientific or ethical
- CB4 Students have communication skills in terms of providing information, ideas, problems and solutions for both specialized and non-specialized audiences

PROGRAMA

Unit 1. Introduction to Energy

- Basic concepts and definitions
- Primary & secondary energy &final energy
- Energy efficiency and energy intensity
- Energy trilemma
- Energy management
- Energy decarbonization
- Energy storage
- Sustainability

Unit 2. Energy sources and useful energy

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Unit 2.1. Fossil Fuels

- Coal
- Oil
- Natural Gas

Unit 2.2. Nuclear Power

Unit 2.3.Renevable energies sources:

- Solar energy
- Wind energy
- Geothermal energy
- Hydroelectric energy
- Biomass energy
- Ocean energy

Unit 3. Energy policies and strategies in the UE

- European strategy in energy
- European action plan for energy efficiency
- Sustainability & climate change

Unit 4. Energy & economy

ACTIVIDADES FORMATIVAS

- Excursions to relevant centres in the field of renewable energy will be made.
- Lab practices will include the process of second generation biofuel production.

The schedule of visits will be provided at the begining of the course.

EVALUACIÓN

CONVOCATORIA ORDINARIA

- May' 26

CONVOCATORIA EXTRAORDINARIA

- June' 26

HORARIOS DE ATENCIÓN

Eduardo Ryan (eryan@external.unav.es)

- Contact by email

BIBLIOGRAFÍA

- Bibliography will be provided during the course.