

FACULTY OF **ENGINEERING**

DEGREE COURSE: **INDUSTRIAL ENGINEERING BS**

SUBJECT: ENERGY SCIENCE

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OBJECTIVES

The course is aimed at providing the fundamentals of energy sciences, in particular the knowledge of energy sources (fossils and renewable) and technologies for their exploitation.

CONTENTS

Exergetic analysis .

The international energy scenario.

Fossil fuels. Nuclear energy.

Renewable energy: Solar energy, Hydraulic energy, Wind energy, Geothermic energy,

Energy from waste, Biomass and biofuels

Cogeneration and combined cycles

Hydrogen, Fuel cells

Energy saving

LEARNING OUTCOMES

At the end of the course, students will:

- know the world energy scenario, available resources and exploitation technologies
- be able to perform energetic and exergetic analysis.
- be able to evaluate the environmental impact
- be able to evaluate, from the techno-economic point of view, each technology for energy sources exploitation.

ASSESSMENT

Written exam: multiple choice and open questions

RECOMMENDED TEXTBOOKS

John Andrews, Nick Jelley, *Energy Science: Principles, Technologies, and Impacts*
Paperback – Oxford 2007
