

FACULTY OF **ENGINEERING**

DEGREE COURSE: **INDUSTRIAL ENGINEERING**

MASTER DEGREE: **INDUSTRIAL ENGINEERING / ENERGY**

**SUBJECT:** SUSTAINABLE ENERGY PLANNING

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## **OBJECTIVES**

The scope of this course is to provide the essential knowledge to define and model the sustainable energy planning of a system.

The first part of the course introduces the world energy context. Later on, climate change mechanisms and strategies for adaptation and mitigation are discussed in detail.

The second part of the course is focused on the most important technologies for a sustainable energy system: renewables, smart grid, energy efficiency in the household and transport sectors.

Hereafter, some examples of local energy planning are presented together with an analysis of the present environmental policies and cooperation mechanisms.

Eventually, the last part of the course refers to the introduction and use of the EnergyPLAN tool for the modelling of energy, economic and environmental analysis, alternatives to the current energy systems.

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## **CONTENTS**

World energy outlook

Climate change and governance actions

Strategies for climate change adaptation and mitigation

Technologies for sustainable energy systems

Smart cities, smart grid and sustainable energy planning

Environmental projects and cooperation

The main softwares for the development of energy analysis territorial

The EnergyPLAN model: a tool for the evaluation of alternative energy systems

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## **LEARNING OUTCOMES**

At the end of this course students will own the essential knowledge for defining and modelling a sustainable energy planning of a system.

In particular, students should know the most important technologies for a sustainable energy system together with the present environmental policies and cooperation mechanisms.

In addition, students should be able to deal with a sustainable energy planning also with reference to the use of the EnergyPLAN tool.

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## **ASSESSMENT**

Written exam: multiple-choice tests and open-ended questions

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## **RECOMMENDED TEXTBOOKS**

World energy outlook

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