

Academic Year: (2024 / 2025)

Review date: 22-04-2024

Department assigned to the subject: Social Sciences Department

Coordinating teacher: NICOLINI ALESSI, ESTEBAN ALBERTO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

OBJECTIVES

- Comprehension of the importance of production processes and energy consumption in the economics carbon intensity
- Knowledge of the role of the production processes and energy consumption in the transition to decarbonized energetic systems.
- Comprehension of the main determinants of climate change mitigation related to the production and use of energy (technologic and behavioural factors) as well as the methods for its identification.
- Knowledge of the role and relevance that different energetic technologies can play in the climate change mitigation, with special thoughtfulness on electric generation technologies and, within these, renewable technologies.
- Grasp of fundamental concepts of the economy of renewable energies that allow students to identify its benefits and costs in the context of the decarbonized energetic transition.
- Profound knowledge of the public policies that support the decarbonized energetic transition, with emphasis on the promotion of energetic efficiency and renewable technologies in the electric generation system.
- Ability to compare policies and instruments to detect their advantages, inconveniences, and applicability in different contexts.
- Comprehension of the functioning of institutions and global governance mechanisms related to the energetic transition.

DESCRIPTION OF CONTENTS: PROGRAMME

- The energy transition and climate change: the contribution of energy to climate change and climate change mitigation.
- Use and production of energy: the role of technological and behavioral change in climate mitigation.
- Renewable energy technologies. The costs and benefits of renewable energy in the perspective of climate mitigation.
- Policies for the energy transition and climate change mitigation.
- International and supranational institutions tackling climate change and energy transitions, their varying platforms, agreements and strategies, principles and challenges of global governance in this context.

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LEARNING ACTIVITIES AND METHODOLOGY

- Theoretical classes
- Theoretical-practical classes
- Group assignment
- Individual assignment
- Partial and final exams

ASSESSMENT SYSTEM

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| % end-of-term-examination: | 40 |
| % of continuous assessment (assignments, laboratory, practicals...): | 60 |

Attendance and participation in class: 5-15 %
 Research paper generated during the course 30-50 per cent.
 Final exam. 40 per cent.

BASIC BIBLIOGRAPHY

- IPCC Climate Change 2022. Mitigation of Climate Change. , Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change., 2022
- IRENA World Energy Transitions Outlook 2022. 1.5° C pathway, IRENA, 2022

ADDITIONAL BIBLIOGRAPHY

- BLEDA, M., DEL RIO, P. The market failure and the systemic failure rationales in technological innovation systems. , Research Policy 42(5), 1039-1052, 2013.
- Del Río, P. y Ragwitz Handbook on the Economics of Renewable Energy, Edward Elgar, 2023
- IEA Renewable Energy Market Update Outlook for 2022 and 2023, IEA, 2022
- IEA Clean energy innovation, IEA, 2020
- IEA A 10-Point Plan to Cut Oil Use, IEA, 2022
- IEA The Role of Low-Carbon Fuels in the Clean Energy Transitions of the Power Sector, IEA, 2021

- IEA Global Hydrogen Review 2021, IEA, 2021
- IEA Global Energy Review: CO2 Emissions in 2021, IEA, 2022
- IEA Renewables 2021. Analysis and forecasts to 2026, IEA, 2021
- IRENA Climate Change and Renewable Energy, IRENA, 2019
- IRENA Renewable energy in national climate action, IRENA, 2018
- IRENA Turning to renewables: Climate-safe energy solutions, IRENA, 2017
- IRENA REthinking Energy: Renewable Energy and Climate Change, IRENA, 2015

BASIC ELECTRONIC RESOURCES

- IEA . Net Zero by 2050. A Roadmap for the Global Energy Sector:
https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf
- IEA . World Energy Outlook: <https://www.iea.org/reports/world-energy-outlook-2021>
- IEA . Agencia Internacional de la Energía : <https://www.iea.org/>
- IPCC . Climate Change 2022: Mitigation of Climate Change: <https://www.ipcc.ch/report/ar6/wg3/>
- IPCC . Panel Intergubernamental del Cambio Climático: <https://www.ipcc.ch/>
- IRENA . World Energy Transitions Outlook: 1.5°C Pathway: <https://www.irena.org/publications/2022/Mar/World-Energy-Transitions-Outlook-2022>
- Padilla, E., Alcantara, V., del Río, P. . The driving factors of CO2 emissions from electricity generation in Spain: A decomposition analysis. Energy Sources Part B: Economics, Planning and Policy.:
<https://doi.org/10.1080/15567249.2021.2014604>
- REN21 . REN21: https://www.ren21.net/about-us/who-we-are/?gclid=EAlaIqObChMlre_j_teJ-AIVTeR3Ch2Lywv7EAAYASACEgJU6fD_BwE