Universidad de Navarra

Global Change

Guía docente 2026-27

PRESENTACIÓN

Short description:

This course aims to show how environmental data is used to influence society and policymakers. The aims to cover a wide range of topics in order to give a holistic understanding of environmental management at the upper levels of government, starting from the actual data (modelled vs measured), understand how environmental issues impact biodiversity, health and economy, and how a cost benefit analysis can help to adjust resources to tackling environmental issues.

- Titulación: Environmental Sciences
- Módulo/Materia: VIII
- ECTS: 3
- Curso, semestre: 1st
- Carácter: OP
- Profesorado: Johann Martinez Lüscher (johannml@unav.es)
- Idioma: English
- Aula, Horario: 16 (Ed. Bibliotecas) Thursdays at 12 pm -14 pm

The course aims to be specific enough to bring some novelty to Environmental Sciences Students, but a previous scientific background is not required. In fact, this course deals with concepts such as macroeconomics, states production model, state energy production system, states trade balance, ... which are key to understanding the drivers environmental issues and to the conception of solutions.

This course offers a novel perspective on environmental sciences by examining the complex interplay between governance, economics, and society in addressing global ecological challenges. Specifically, it explores how national governments, policymakers, economic actors, and civil society interact in environmental decision-making, highlighting the role of both domestic policies and international cooperation in global governance. Furthermore, the curriculum analyzes the critical tension and synergy between national economic interests, international trade, and environmental policy frameworks.

RESULTADOS DE APRENDIZAJE (Competencias)

Understand the Drivers, Pressure, State and Impact of Environmental Issues. Depending on their background the students will be expected to know the fate of pollutants in the environment. What are the human activities causing pollution and how these pollutants affect human lives.

Understand how to synthesize big scientific models and analysis into operable indicators. Understand how to present data to society and policy makers, in order to impact the decisions they will make.

Learn how to communicate efficiently orally to influence decision makers.

PROGRAMA

26 one-hour lectures starting September 3rd and ending on November 26th. 3 hours reserved for examination and 1 hour for consulting. 30 in-person hours in total.

The course will explain the current state and trend of the most relevant topics concerning environmental issues following the several publications from the United Nations Environmental program, FAO, and . This list of contents include but are not limited to:

1. United Nations Global Environmental Outlook 7 report “Part B: State and Trends of the Environment“
2. United Nations Intergovernmental Panel for Climate Change Assessment Reports.
3. United Nations Food and Agriculture reports on:
    1. State of world fisheries and aquaculture
    2. State of Food and Agriculture
    3. State of Food Security and Nutrition
    4. State of the World's Land and Water Resources for Food and Agriculture

These documents are considered compases for the actual topics of the course, divided into following chapters:

1. Introduction and fundamentals of environmental management: DPSIR framework, Implement economic assessments to environmental issues.
2. Air: Strongly focused on climate change, Air pollution.
3. Land and Soil: Land use, Non-food Crops, Ag as an strategic sector, Soil health.
4. Freshwater: Freshwater use, Groundwater, Reservoirs, Emerging pollutants, Sand a resource under pressure and
5. Oceans and Coasts: Large scale climatic phenomena, Fisheries, aquaculture, Vulnerability of reefs and seagrass beds, Ocean acidification, Marine plastic.
6. Biodiversity: Biodiversity as a service provider, biodiversity loss processes and biodiversity conservation

ACTIVIDADES FORMATIVAS

The final grade is obtained following this criteria:

· 60% of the final grade will be based on a written exam (50% multiple choice exam and 50% short questions). The minimum grade to get averaged with the presentation and participation will be 4 points in a scale of 10.

· 30% of the final grade will be based on a 10 min presentation of a case study chosen by the student. These presentations will take place at the end of the lectures within the time assigned to the course.

· 10% of the final grade will be based on the participation in class.

All the qualifications will go through a weighted average. The minimum qualification to pass the course will be 5 out of 10.

EVALUACIÓN

CONVOCATORIA ORDINARIA

The final grade is obtained following this criteria:

· 60% of the final grade will be based on a written exam (50% multiple choice exam and 50% short questions). The minimum grade to get averaged with the presentation and participation will be 4 points in a scale of 10.

· 30% of the final grade will be based on a 10 min presentation of a case study chosen by the student. These presentations will take place at the end of the lectures within the time assigned to the course.

· 10% of the final grade will be based on the participation in class.

All the qualifications will go through a weighted average. The minimum qualification to pass the course will be 5 out of 10.

CONVOCATORIA EXTRAORDINARIA

If the qualificaiton is not enough, the exam can be taken a second time in June.

HORARIOS DE ATENCIÓN

Dr. Johann Martínez Lüscher.(Johannml@unav.es)

- Despacho: 5B06. Edificio. Planta .5a.
- Horario de tutoría: Thursdays 14h-16h

BIBLIOGRAFÍA Y RECURSOS

- Our World in Data Official Website: A free, non-profit online scientific publication and database produced by researchers at the University of Oxford and the Global Change Data Lab. The platform provides accessible, empirical research and over 14,000 interactive charts tracking global issues—such as health, poverty, climate change, energy, and population dynamics—to help users understand long-term global trends and make progress against the world's largest problems.

United Nations Global Environmental Outlook

- Global Environment Outlook 6 (GEO-6): Published in 2019, this edition highlights the global status of air pollution, climate change, energy developments, and the growing infrastructure strains on cities and transportation systems. https://www.unep.org/resources/assessment/part-state-global-environment
- Global Environment Outlook 7 (GEO-7): Subtitled A Future We Choose, this 2025 assessment features insights from hundreds of multi-disciplinary scientists detailing why urgent investment in the Earth yields trillion-dollar benefits for all. https://wedocs.unep.org/items/bba44efd-7715-4054-8432-92b270ee9d67

United Nations Food and Agriculture reports on:

- SOFI (The State of Food Security and Nutrition in the World): The most widely anticipated annual assessment. Jointly compiled with other UN agencies (like UNICEF and WHO) to track global hunger, malnutrition, and progress toward SDG 2 (Zero Hunger).
- SOFA (The State of Food and Agriculture): An annual report providing comprehensive global overviews on a selected developmental topic, such as agricultural automation, digital agrifood systems, or the true cost of food.
- SOFIA (The State of World Fisheries and Aquaculture): A biennial analysis tracking global fish stocks, aquaculture production trends, and the sustainability of ocean resources.
- SOLAW (The State of the World's Land and Water Resources for Food and Agriculture): A critical report assessing human-induced land degradation, global freshwater withdrawal, and sustainable soil and water solutions.

United Nations Intergovernmental Panel for Climate Change Assessment Reports

The AR6 Synthesis Report: Climate Change 2023 integrates the findings of all three Working Groups and three Special Reports.

- Full Volume Document (PDF): The complete, comprehensive integrated file.



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- Summary for Policymakers (PDF): The condensed, 34-page summary approved line-by-line by member governments.