Energy and Climate Change Economics

ECTS : 6

Volume horaire : 36

Description du contenu de l'enseignement :

Climate change is mainly linked to an energy model that has historically been based on fossil fuels (coal, oil, and natural gas) since the first industrial revolution. Limiting the main effects of climate change (extreme weather events, sea level rise, etc.) and their economic costs involves deploying low-carbon energy sources (wind power, solar power, etc.), improving energy efficiency and, more broadly, transforming the organization of our societies. The course addresses the main economic challenges and public policies related to these transformations. In this context, the course examines: This course is on Moodle.

- Economic theory, empirical perspectives, and political economy of energy supply and demand, both for fossil fuel and low carbon sources of energy;
- Public policies affecting energy markets including taxation, price regulation and deregulation, energy efficiency, and control of emissions;
- A specific attention will be given to economic policies such as carbon taxes and tradable emission permits and to the problems of displacing fossil fuels with new energy technologies.

Course Structure:

1. Introduction : what do we mean by « energy transition » (1/2)
2. Introduction : what do we mean by « energy transition » (2/2)
3. Climate change economics : topics and tools (1/3)
4. Climate change economics : topics and tools (2/3)
5. Climate change economics : topics and tools (3/3)
6. Implementing the Paris-Agreement : principles and challenges (1/3)
7. Implementing the Paris-Agreement : principles and challenges (2/3)
8. Implementing the Paris-Agreement : principles and challenges (3/3)
9. World Energy Outlook 2026 : analyses and long term scenarios (1/2)
10. World Energy Outlook 2026 : analyses and long term scenarios (2/2)
11. Live analysis of the COP31
12. Final exam

Compétence à acquérir :

By the end of the course, students will be able to:

- Understand the economic drivers of energy supply, demand, and climate change;
- Analyze major public policies such as carbon taxes, emission permits, and energy efficiency measures;
- Evaluate the challenges of transitioning from fossil fuels to low-carbon energy sources;
- Interpret long-term climate and energy scenarios;
- Discuss global issues related to climate governance, geopolitics of energy, and access to energy.

Mode de contrôle des connaissances :

Final exam (50%) + Group project (50%). The numerical grade distribution will dictate the final grade. The passing grade for a course is 10/20. **Attendance** Attendance is mandatory. Students are expected to attend all classes, arrive on time, and stay for the entire session. Repeated absences or lateness may affect the final grade. **Class Participation** Active participation is encouraged, as it contributes to making classes more engaging and instructive. Students are expected to come prepared and contribute thoughtfully to discussions. When participation is part of the course assessment, it is evaluated based on the quality of contributions rather than their quantity. **Exam Policy** Students are not allowed to bring any materials into exams, except those explicitly authorized by the instructor. Unexcused absences from exams or failure to submit assigned cases will result in a grade of zero when calculating final averages. All exams must be submitted at the end of the examination period. **Communication and Grading** All questions or concerns regarding grading or course policies must follow the official procedures. No direct negotiation with instructors about grades or assessments is permitted. Be aware of the rules in

Université Paris Dauphine about plagiarism and cheating during exams. All work turned in for this course must be your own work, or that of your own group. Working as part of a group implies that you are an active participant and fully contributed to the output produced by that group.

Bibliographie, lectures recommandées :

- All course support documents will be made available via Moodle before the start of the sessions.

Patrice Geoffron holds a PhD in industrial organization and is a professor of economics. He was interim administrator of Paris-Dauphine in 2020, and previously served as international vice president and director of the economics laboratory (LEDa). He currently heads the energy-climate team. His research focuses on the convergence between electricity and telecommunications in the context of the low-carbon energy transition, with a particular emphasis on the development of smart cities, smart grids, and the emergence of new organizations and business models, with a recent focus on blockchain.

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