

Energy and Society

Code: 102832
ECTS Credits: 6

Degree	Type	Year	Semester
2501915 Environmental Sciences	OT	4	2

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Joan Checa Rius

Prerequisites

To take this subject it is recommended to have passed the following subjects:

- Medi Ambient i Societat
- Administration and Politics Environmentals
- Gestió i Planificació dels Recursos i del Territori

On the other hand, during the course concepts and knowledge previously acquired in the subjects of basic and compulsory education will be used:

- Usos Humans del Sistema Terra
- Introducció al Dret
- Dret Ambiental
- Economia Ambiental i dels Recursos Naturals
- Cartografia i Fotointerpretació

Objectives and Contextualisation

Contextualization

This is an optional subject of 6 ECTS credits of the Degree in Environmental Sciences. It is scheduled for the second semester of the fourth year and forms part of the mention of Environmental Governance. As such, it focuses on the analysis and management of the forms of government and intervention on the environment. Specifically it takes as field intervention study and an environmental vector of great relevance in modern times: energy.

The subject studies the relations between the natural environment and society, adopting an approach of character socioeconomic. However, the subject has a profile interdisciplinary and is closely related to many other subjects of the Degree such as Geography, Legal Instruments for Environmental Sciences, Political Science for Environmental Sciences and Economics for Environmental Sciences.

Currently the role of energy has achieved an important never seen, both for its environmental dimension as for its economic dimension (price evolution), social (energy poverty situations), political (control over energy resources is in hands of few actors) and democratic (lack of transparency and participation in decision-making related to energy).

In this context, the subject tries to identify and answer those questions that explain the characteristics of the different energy systems: What are the socio-environmental impacts of the dominant energy systems? What inequalities do these systems generate? What actors are involved in the production, distribution and marketing energetic what interests do these actors have and what resources do they mobilize? Is it possible to think of alternative energy systems in terms of location, management or us? What energy policies are being implemented from the different levels of government? Is it possible to think of other forms of public intervention on access and energy management? What is civil society doing to face the energy crisis situation?

It is based on the premise that the different energy systems respond to certain interests, depend on power relations between different actors and have different social, environmental and economic impacts. Insofar as there is not a single possible energy system and in which the hegemony of one system or another is the result of a set of acting forces, the subject is interested in analyzing the advantages and disadvantages of both the dominant systems and the alternative. The subject aims to discover the interests and power relations that hide behind each energy system, paying attention to its environmental and social impacts. And wants to discover, at the same time, what are the foundations of the energy transition already started in most Western societies, in what way will it represent an evolution or a radical change with the current system, what actors will play this transition and what are the requirements for its development.

Due to the characteristics of the treated material and its nature multiscalar, the relations between energy and society will be analyzed for the different territorial levels, from the local to the global, situating the reference center of this analysis in our closest reality, and thus covering a scope that goes from the Catalan municipalities in the European Union passing through the Catalan and Spanish administrative and social context.

Formative objectives

The main objective of this subject is to analyse the relationship between society and energy systems, understood as the set of technologies and socio-environmental processes that are used to transform primary energy into the energy services that society demands. Based on this general objective, the subject is especially interested in the explanatory factors of the current situation, the impacts and possible alternatives.

At the end of the course the student should be able to:

- Identify and characterize the different models of energy management
- Use and convert the different units of energy measurement
- Explain the historical and geographical evolution of the energy problem
- Characterize the different energy systems and the social uses of energy
- Know the different energy sources, their characteristics and their impacts
- Know the different systems of energy use
- Analyse the social and political causes of conflicts arising from the use and access to energy resources
- Use and relate the different scales to analyse the energy problems
- Identify the actors of the energy systems, their interests and their resources
- Describe and interpret the legal and administrative framework of energy policies
- Apply the Public Policy Analysis approach to energy policies
- Critically criticize the energy policies of the different levels of public administration
- Propose alternative measures for sustainable energy management
- Propose creative, adequate and viable solutions for the resolution of diverse energy problems
- Present information in a synthetic and attractive way with cartographic support

Competences

- Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
- Analyze and use information critically.
- Demonstrate adequate knowledge and use the tools and concepts of the most relevant social science environment.
- Demonstrate concern for quality and praxis.
- Demonstrate initiative and adapt to new situations and problems.
- Quickly apply the knowledge and skills in the various fields involved in environmental issues, providing innovative proposals.
- Teaming developing personal values regarding social skills and teamwork.
- Work autonomously

Learning Outcomes

1. Adequately convey information verbally, written and graphic, including the use of new communication and information technologies.
2. Analyze and use information critically.
3. Demonstrate concern for quality and praxis.
4. Demonstrate initiative and adapt to new situations and problems.
5. Identify geographic processes in the environmental surroundings and to value properly and originally.
6. Know and apply the most relevant methodologies in the planning.
7. Recognize and explain the spatial relationships at different territorial stairs, physical, economic, social and cultural diversity of the territories.
8. Teaming developing personal values regarding social skills and teamwork.
9. Undertake spatial relationships on different territorial stairs through the relationships between nature and society in the field of territorial planning.
10. Work autonomously

Content

The social and territorial aspects of energy

1. Geographic contextualization
2. Historical Contextualization

Energy systems

3. Definition, components and requirements

The energy market and agents

The administration

4. The Administration and the energy policy
5. The European Union, the State and the Generalitat
6. Local administrations

Energy companies

7. The supply of petroleum products
8. The supply of natural gas

9. The supply of electricity

Consumers

10. Energy consumption: characteristics and determinants

The forms of relationship of the agents

11. The operation of the gas and oil fuel market

12. The operation of the electricity market

Energy and conflict

13. Territorial conflicts: NIMBY

14. Social conflicts: energy poverty

15. Conflicts intergenerational: energy and landscape

The model change

16. The energy transition

Planning

17. General considerations on planning

18. Sectoral planning

19. Territorial and urban planning

Methodology

The teaching activities of the subject will be structured as follows:

- Lectures: teacher exhibitions encouraging debate and student participation.
- Exercises directed in the classroom: several sessions will be allocated to exercises based on the realization of computer practices with software standard (MS Office) and geographic information systems free (QGIS).
- Cooperative work based on guided readings: several sessions of formal cooperative work will be carried out based on the previous work of the students (readings).
- Team work - exhibitions of the students: the students must do a group work, the results will be exposed orally in the classroom.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classroom exercises (classroom practices)	15	0.6	2, 6, 4, 3, 9, 1, 8
Master classes (theory)	25	1	2, 6, 9, 5, 7

Student exhibitions (seminars)	10	0.4	5, 7, 1, 10, 8
Type: Supervised			
Group tutorials	2	0.08	2, 6, 5, 8
Oriented readings	12	0.48	2, 5, 7, 1, 10
Preparation of exercises	10	0.4	2, 6, 4, 3, 10
Teamwork	10	0.4	2, 5, 7, 1, 8
Type: Autonomous			
Individual tutorials	1	0.04	2, 6, 4, 3, 9, 5, 7, 1
Reading and personal study	28	1.12	2, 6, 9, 5, 7, 10
Search for information	10	0.4	2, 6, 9, 5, 7, 10
Teamwork	25	1	2, 6, 4, 3, 9, 5, 7, 1, 8

Assessment

The subject will be evaluated according to the following evaluation evidences:

- Exam (40%). There will be two partial exams. The final grade of the exam will be the average of the two partial exams.
- Team work (30%). The work note (multiplied by the number of group members) will be divided among the students of the group work. If they do not notify the distribution form or there is no agreement between them, then the note will be distributed equally.
- Readings (10%). The readings will be evaluated based on the participation of the students in the seminar sessions.
- Exercises in the classroom (20%). The rating will result from the average of all the exercises performed.

To pass the subject is essential:

- a) A minimum of 5 points (out of 10) in each of the two partial tests
- b) A minimum of 5 points (out of 10) in group work
- c) A minimum of 5 points (out of 10) in the average of exercises in the classroom

In case the evaluation of any of the parties does not finally exceed the minimum required, the numerical note of the file will be a maximum of 4.5.

If no of the previous evidences of evaluation of the student is delivered, it will be qualified with a "not presented".

Recovery:

They will only be revaluables: Exam, exercises in the classroom and group work.

To participate in the recovery of students must have been previously evaluated in a set of activities the weight of which equates to a minimum of two thirds of the total grade of the subject.

Plagiarism or irregularities in the evaluation

In the event of a student committing any irregularity that may lead to a significant variation in the grade awarded to an assessment activity, the student will be given a zero for this activity, regardless of any disciplinary process that may take place. In the event of several irregularities in assessment activities of the same subject, the student will be given a zero as the final grade for this subject.

In the event that tests or exams cannot be taken onsite, they will be adapted to an online format made available through the UAB's virtual tools (original weighting will be maintained). Homework, activities and class participation will be carried out through forums, wikis and/or discussion on Teams, etc. Lecturers will ensure that students are able to access these virtual tools, or will offer them feasible alternatives.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exercises in the classroom	20%	0	0	2, 6, 4, 3, 9, 5, 7, 1, 8
Readings	10%	0	0	9, 5, 7, 1, 10, 8
Team work	30%	0	0	2, 6, 9, 5, 7, 1, 8
Test (Exam)	40%	2	0.08	2, 6, 9, 5, 7, 1

Bibliography

One or more recommended readings will be indicated for each topic. There will also be several readings to analyze in class. In addition, however, the following general bibliography for the course is suggested:

Abrasmky, Kolya. (Ed.). (2010). *Sparking A Worldwide Energy Revolution. Social Struggles in the Transition to a Post-Petrol World*. Edinburgh: AK Press.

Azcárate, Blanca., & Montesa, Ferrán. (2014). *Batallas Por la Energía. Atlas Le Monde Diplomatique*. Cybermonde.

Boyle, Godfrey. (Ed.). (2012). *Renewable Energy: Power for a Sustainable Future* (3rd ed.). Oxford: Oxford University Press and Open University.

Boyle, Godfrey. (Ed.). 2007. *Renewable electricit & the grid: the challenge of variability*. London: Earthscan Publications.

Canal, Ramon. (ed. . (2013). *Ciudades y pueblos que puedan durar: políticas locales para una nueva época*. Icaria Editorial.

Corominas, Joaquim. (2019). El model energètic. In *NATURA, ÚS O ABÚS? (2018-2019)* (3rd ed.). <https://doi.org/10.2436/15.0110.22.7>

Droege, Peter. (Ed.). (2008). *Urban energy transition: from fossil fuels to renewable power*. Elsevier.

Fernández, Ramon., & González, Luis. (2018). *En la espiral de la energía*. Madrid: Libros en Acción.

Furró Estany, E. (2019). *La transformació del sistema energètic. Recursos, raons i eines*. Octaedro.

González Velasco, J. *Energías renovables*. Reverté (2009).

Hildyard, Nichola., Lohmann, Larry., & Sexton, Sarah. (2014). *Seguridad energética ¿para qué? ¿para quién?* Libros en Acción, ODG & The Corner House.

Hopkins, Rob. 2008. *The transition handbook: from oil dependency to local resilience*. Vermont: Chelsea Green.

Iraegui, Juanjo. I Ramos, Jesús. 2004. *Gestió local de l'energia*. Barcelona: Fundació Pi i Sunyer

Patterson, Walt. (2007). *Keeping the Lights On: Towards Sustainable Electricity* (Royal Institute for International Affairs, ed.). London: Chatham House and Earthscan.

Perlin, John. (1999). *From Space to Earth. The Story of Solar Electricity*. Cambridge, Massachusetts: Harvard University Press.

Prats, Fernando., Herrero, Yayo., & Torrego, Alicia. (Eds.). (2016). *La Gran Encrucijada*. Retrieved from https://blogs.fuhem.es/forotransiciones/wp-content/uploads/sites/51/2017/05/GranEncrucijada_feb2017_baja.pdf

Puig, Josep. (2004). *Prospectiva energètica. Els contorns d'un nou model energètic i el procés de transició*. Barcelona.

Puig, Josep., & Cororminas, Joaquim. (1990). *La ruta de la energia*. Barcelona: Anthropos.

Riba Romeva, Carles. (2011). *Recursos energètics i crisi: la fi de 200 anys irrepetibles*. Retrieved from <https://upcommons.upc.edu/handle/2117/12972>

Riutort, Sebastià. (2016). *Energia para la democracia: la cooperativa Som Energia como laboratorio social*. Retrieved from <https://www.traficantes.net/libros/energía-para-la-democracia>

Romero, Cote i Barcia Magaz (eds.). 2014. *Alta tensión. Por un nuevo modelo energético sostenible, democrático y ciudadano*. Icaria.

Ruiz, Valeriano, 2006. *El reto energético*. Almuzara

Sans, Ramon., & Pulla, Elisa. (2014). *El col·lapse és evitable La transició energètica del segle XXI (TE21)*. Octaedro.

Scheer, Hermann. (2009). *Autonomía energética*. Barcelona: Icaria Editorial.

Scheer, Hermann. (2011). *El imperativo energético 100% ya Cómo hacer realidad el cambio integral hacia las energías renovables*. Barcelona: Icaria Editorial.

Smil, Vaclav. (2003). *Energy at the Crossroads. Global Perspectives and Uncertainties*. Cambridge: The MIT Press.

The Worldwatch Insititute. (2016). *State of the world: Can a city be sustainable?* Island Press/Center for Resource

Software

Standard software (MS Office) and geographic information systems (QGIS) will be used throughout the course.