
Energy and renewables

Professor: Jaume Albertí Bueno

Office hours: by appointment

Course Type: Elective

Credits: 3 ECTS

Term: Third

Course Description

The course enables students to know and understand the difference between energy from fossil fuels and energy from renewable sources, to distinguish the main energy conversion systems, to understand the environmental problems associated with the use of energy, and to understand the problems associated with the incorporation of renewable energies in the energy mix. The course provides an overview of the EU energy objectives as well as the main directives and recognizes the importance of national strategic documents for clean energies (Renewable Energy Action Plans, Action Plans for Energy Efficiency, National plans for energy and climate, Action plans for sustainable energy). The course provides the student with a global map of international organizations working in the energy sector.

Objectives (resultados de aprendizaje) and competences

At the end of the course, students should:

- Know the global energy demand per types of energy and technologies, as well as understanding the way energy is transformed to be used in human activities.
- Gain deep understanding of renewable energy technologies, its advantages and challenges.
- Learn from energy transition experience in different countries and industries.
- Develop decision-making skills based on the results and progress made from science and research.

Methodology

The course comprises eight 3-hour sessions, which combine theory lecturing with general debates and applied discussions on business cases and exercises. Participants will also engage in presentations of reports, cases, or project assignments. Activities will require both individual and group work.

The course also involves a substantial amount of autonomous work outside the classroom combining readings that will help you to gain a deeper understanding of the material covered in the class.

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Evaluation criteria

Three elements concur in the final mark:

- **Final exam (40%):** the final exam is used to assess the individual level of knowledge and understanding of each student. It will include questions covering topics from all the classes. This item counts for 40% of the final mark. To pass the exam the minimum grade is 5.
- **Project and presentation (40%):** Students will apply their knowledge to a real life situation. They are expected to use the topics they learnt to use during the classes.
- **Class attendance and active participation (20%):** Attendance in every session is expected and recorded by means of an attendance sheet. It is your responsibility to comply with this measure. Class attendance is compulsory and will be considered in your final grades; punctuality is a must. Note that unexcused absences reduce your score on the "attendance and participation" element of your final grade. In fact, two or more unexcused absences will result in an automatic score of zero and, in all likelihood, a fail mark for the course as a whole.

Attended all the sessions + actively and consistently participated in the class discussions during the entire course period	20
Attended all the sessions + actively and consistently participated in most of the class discussions	15-19
No more than one unexpected absence + often participated in the class discussions	10-14
No more than one unexpected absence + participated in some class discussions	5-9
No more than one unexpected absence + limited or no participation in class discussions	1-4
Otherwise	0

Other evaluation criteria to take into consideration:

Retake

Students who fail the course during regular evaluation will be allowed ONE re-take of the examination/evaluation. Students that pass any Retake exam should get a 5 by default as a final grade for the course. If the course is again failed after the retake, students will have to register again for the course the following year.

No-show

In case of a justified no-show to an exam, the student must inform the corresponding faculty member and the director(s) of the program so that they study the possibility of rescheduling the exam (one possibility being during the "Retake" period). In the meantime, the student will get an "incomplete", which will be replaced by the actual grade after the final exam is taken. The "incomplete" will not be reflected on the student's Academic Transcript.

Plagiarism

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Plagiarism is to use another's work and to present it as one's own without acknowledging the sources in the correct way. All essays, reports or projects handed in by a student must be original work completed by the student. By enrolling at any ESCI UPF BSM Master of Science and signing the "Honor Code," students acknowledge that they understand the schools' policy on plagiarism and certify that all course assignments will be their own work, except where indicated by correct referencing. Failing to do so may result in automatic expulsion from the program.

Bio of Professor

Jaume is currently leader of research line on sustainable construction and energy, and responsible of External Relations at the UNESCO Chair in Life Cycle and Climate Change. Since joining in 2015 his research focuses primarily on sustainable cities, construction, and industry projects. He was 4 years responsible for the Spanish Secretariat of Construction21, the international organization for sustainable construction. With more than 10 years working in the environmental sustainability field, he has been assessing and advising for sustainability implementation in many sectors, such as: industrial, pharmaceutical, construction, design, waste management, tourism, fashion, universities, local governments, manufacture, chemistry, food, and cultural among others. He has been involved in international projects cooperating with colleagues from different cultures around the world: Colombia, USA, Canada, France, Portugal, Macedonia, Morocco, China, Italy, Australia, Israel, and Palestine among others.

Jaume Albertí holds a PhD developed at the UNESCO Chair in Life Cycle and Climate Change. His thesis was awarded as the best PhD thesis in environment by the University of Girona. It is the first approach to comparability of Cities Sustainable development, with a life cycle perspective. He also holds an MSc in Sustainability and Corporate Social Responsibility (Jaume I University). Master of Advanced Studies in Applied Mechanics and Industrial Engineer (University of Navarra). Technical Architect (Basque Country University).

Reading Materials/ Bibliography/Resources

No textbook is required for this course. All the required material will be provided. Any readings, notes, handouts, dataset, or additional course material will be available through the course website.

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