

Course guide

240285 - 240EN42 - Futures Thinking and Ideation for Energy Projects

Last modified: 07/09/2023

Unit in charge: Barcelona School of Industrial Engineering
Teaching unit: 709 - DEE - Department of Electrical Engineering.

Degree: MASTER'S DEGREE IN ENERGY ENGINEERING (Syllabus 2022). (Optional subject).

Academic year: 2023 **ECTS Credits:** 5.0 **Languages:** English

LECTURER

Coordinating lecturer: Sumper, Andreas

Others: Sumper, Andreas
Jené Vinuesa, Marc
Gonzalez De Miguel, Carlos

PRIOR SKILLS

None

REQUIREMENTS

It is recommended to take also the subject 240EN43/240286: Prototyping for Energy projects

TEACHING METHODOLOGY

By combining challenge-based learning, design thinking, decision making and business modelling as core methodologies, our course offers a unique learning experience. Throughout the course, students will create solutions to future challenges and be guided through a structured process to develop innovative solutions.

LEARNING OBJECTIVES OF THE SUBJECT

In this course, students will engage in the exploration and identification of future scenarios in the field of energy and sustainability. This will allow them to gain a comprehensive understanding of the cone of plausibility and develop insights into potential outcomes using different futures thinking methodologies.

The specific objectives of this course are to equip students with the knowledge and skills to navigate the cone of plausibility and a range of possible future scenarios and to become proficient in using different futures thinking methodologies to analyse and anticipate trends in the energy and sustainability sector.

STUDY LOAD

Type	Hours	Percentage
Hours large group	15,0	33.33
Hours small group	30,0	66.67

Total learning time: 45 h

CONTENTS

Content

Description:

This subject is organized in activities. Consult the activities on this sheet.

ACTIVITIES

Introduction to long term energy problems and solutions

Description:

This activity provides a concise introduction to long-term energy problems and solutions, giving students a broad understanding of the challenges and opportunities in the energy sector for sustainable development.

Specific objectives:

The specific objectives of this activity are to empower students to think boldly and innovatively to address complex energy problems with transformative solutions by familiarising them with the principles of the Moonshot methodology and its application to energy challenges.

Material:

Comprehensive handouts, informative PowerPoint presentations and detailed course notes are included in the course materials for this activity.

Full-or-part-time: 7h

Theory classes: 2h

Guided activities: 1h

Self study: 4h

Futures Thinking

Description:

This activity provides a comprehensive exploration and identification of future scenarios in the field of energy and sustainability, enabling students to anticipate and manage potential challenges and opportunities for creating a more sustainable future.

Specific objectives:

The specific objectives of this course are to develop a clear understanding of the cone of plausibility and to become familiar with different futures thinking methodologies, enabling students to think critically and strategically about prospective future scenarios.

Material:

Comprehensive handouts, informative PowerPoint presentations, several business model canvases and templates are included in the course materials for this activity.

Full-or-part-time: 25h

Theory classes: 3h

Guided activities: 6h

Self study: 16h

Problem Analysis

Description:

During the activity, students will engage in practical exercises to apply a variety of methodologies, allowing them to analyse problems from different perspectives and gain a comprehensive understanding of the underlying challenges.

Specific objectives:

The activity aims to deepen students' understanding of the constitutive elements that contribute to the complexity of challenging problems, enabling them to develop a holistic perspective and approach to problem-solving.

Material:

Comprehensive handouts, informative PowerPoint presentations, several business model canvases and templates are included in the course materials for this activity.

Full-or-part-time: 18h

Theory classes: 2h

Guided activities: 4h

Self study: 12h

Ideation

Description:

Through hands-on exercises, students will be actively involved in the practice of creative and disruptive idea generation techniques, allowing them to explore innovative possibilities. They will then do an evaluation and selection of ideas with the highest potential for further development and implementation.

Specific objectives:

Students will undertake the process of brainstorming creative solutions, using their imaginative thinking to formulate an ambitious moonshot goal that pushes the boundaries of conventional approaches and aims for transformative impact.

Material:

Comprehensive handouts, informative PowerPoint presentations, several business model canvases and templates are included in the course materials for this activity.

Full-or-part-time: 33h

Theory classes: 4h

Guided activities: 8h

Self study: 21h

Solution development

Description:

To contextualise the moonshot solution, students will apply a business approach, analyse market dynamics, assess the feasibility and develop a strategic framework to ensure the practicality and viability of their ambitious solution.

Specific objectives:

Students will actively seek to articulate the Moonshot concept, explore its intricacies and gain a deep understanding of its business potential, enabling them to envision innovative and impactful projects within the scope of their Moonshot ideas.

Material:

Comprehensive handouts, informative PowerPoint presentations, several business model canvases and templates are included in the course materials for this activity.

Full-or-part-time: 21h

Theory classes: 2h

Guided activities: 6h

Self study: 13h

Business Development

Description:

With a market-driven approach, students will explore the potential for commercialising the Moonshot project, examine market dynamics, and use their insights to develop a robust and sustainable business model that meets their ambitious vision.

Specific objectives:

The specific objective of this course is to guide students in developing a comprehensive business model that effectively exploits the Moonshot project, ensuring its viability, scalability and sustainable impact in the marketplace.

Material:

Comprehensive handouts, informative PowerPoint presentations, several business model canvases and templates are included in the course materials for this activity.

Full-or-part-time: 21h

Theory classes: 2h

Guided activities: 6h

Self study: 13h

GRADING SYSTEM

The evaluation includes the assessment of narratives, problem analysis, ideation, moonshot ideas, business tools, final reports, presentations and peer reviews. Most of the work will be carried out in groups.

Project Work Report. 30%

Final project pitch. 20%

Deliverables performed individually or in groups. 30%

Attendance and participation in practical activities and class project work. 20%

EXAMINATION RULES.

Students must properly document and cite all sources used in their work, following the specified citation style or guidelines provided by the course. Plagiarism is strictly forbidden. When using AI tools to generate text, students should ensure that the output conforms to ethical standards and academic integrity.