

CISPEE2025



Curriculum Design Workshop for an Expedition Learning Semester on Energy Sovereignty Engineering

Keywords

Curriculum Design, Engineering Education, Expedition Learning

Abstract

Decarbonization is a major objective of the EU, which aims to achieve carbon neutrality by 2050. Decarbonization concerns all sectors. The success of a decarbonization strategy requires coordinated action, in particular with higher education institutions through their science and technology curricula when preparing the next generation of engineers.

After 15mins presentation of the context and theoretical background, participants in subgroups of 3-6 design the structure and curriculum of a joint European final Master-2 semester. The context is a 5-month expedition in an imagined cruise ship with T&L workspaces, traveling between several coastal EU cities to visit both universities and large energy companies, e.g. starting from Portugal. The participants draw the itinerary of the low-carbon cruise ship, a real mobile learning lab, visiting at least 5-7 universities and 5-7 companies and inform a canvas of nine components (cf. Figures, hands-on engagement). The components of the curriculum include: main goals and learning outcomes of the program, entry requirements, structure and contents of the program, teaching and learning methods, location of teaching and learning, interpersonal skills, assessment methods, language of instruction, and ethno- and sociographic aspects, including diversity and equity. Some parts are already prefilled.

At the end of the workshop session, participants engage in a semi-structured discussion on current educational practices and potential future directions, a debate free time depending. No prior knowledge is needed for the workshop, even no expertise in energy training, just openness to innovative ideas in curriculum design.

The workshop provides an opportunity for engineering program designers, educational leaders, pedagogists, and teacher, even students and industrials or territorial decision makers, to exchange innovative perspectives on an exciting semester of engineering training.



Fig. 1. Overall workshop context.

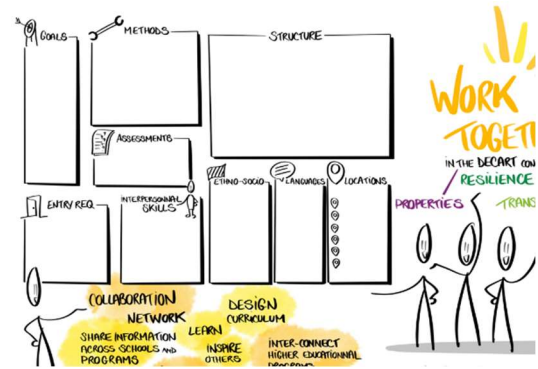


Fig. 2. Components of the curriculum canvas.

Conference topics

The workshop is very practical in sub-groups as methodological with curriculum design principles and original learning model. CISPEE 2025 topics, such as (i) Emerging and future area of engineering education and engineering, (ii) Innovative T&L methods in engineering, as (iii) Curriculum development & design.

Duration

2h are fully appropriate to ensure group cross-presentations and open discussions on transferable in the context of the participants.

Even though a hypothetic curriculum scenario, it has been analysed (quantitative and qualitative online questionnaire sent right after the sessions) that participants strongly appreciate the freedom as the effective collaboration and dynamicity of the session.



Fig. 3. Itinerary analysis.

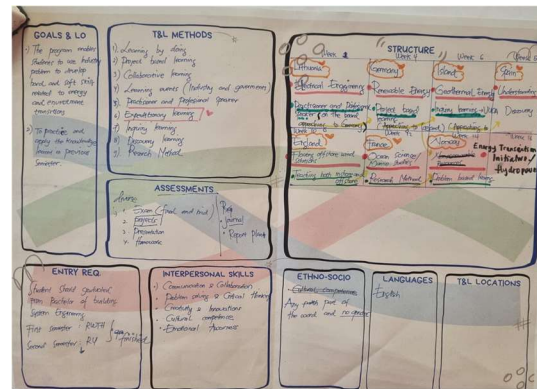


Fig. 2. Curriculum proposal canvased.