DALARNA UNIVERSITY

Course Syllabus

Energy and resource use in the built environment, part 1 5 Credits, Third Cycle

Learning Outcomes

After completing the course, the doctoral student should be able to:

Knowledge and understanding
• Demonstrate a deep understanding of energy systems as infrastructure in the built environment, partly as a technical system and partly linked to key concepts such as sustainability, resilience, resource efficiency and environmental impact.
• Demonstrate a deep understanding of what the built environment‘s energy and material flows look like and affect the environment and how these flows can be changed to reduce the environmental impact and health.
• Discuss and describe a research question in a broader system perspective.
• Demonstrate in-depth knowledge of methodology for energy system analyzes from a resource use perspective.

Skills and abilities
• Demonstrate the ability to identify and formulate issues that contribute to increased knowledge about the built environment‘s energy system and their resource and environmental impact.

Judgement and approach
• Demonstrate insight into how research on resource-efficient built environment contributes to sustainable development.

Course Content

The course begins with lectures on resource efficient infrastructures in a built environment and connected to the key concepts of sustainability, resilience, resource efficiency and environmental impact. The lectures address current international research and national and international regulations and agreements. The challenges of energy systems to contribute to sustainable development in the built environment, both globally and especially in cold climates, are discussed.

The course continues with exercises using different methodologies to analyze and evaluate energy systems and resource use in the built environment on different system levels. The

energy system is discussed both seen from the demand and supply side as well as the role of prosumers in energy systems.

Assessment
Active participation in seminars, 2,5 hp
written assignments, 2,5 hp

Forms of Study
Lectures
Exercises
Seminars
Study visits
Written assignments

Grades
The Swedish grades U–G.

To receive Pass (G) in the course, the student must receive Pass (G) in all modules.
Active participation in seminars, 2,5 hp
written assignments, 2,5 hp

Prerequisites
To be admitted to the course, students must either have been admitted to the doctoral programme Energy Systems in the Built Environment or have a relevant thesis subject at Dalarna University or another higher education institution. Doctoral students who have not been admitted to a doctoral programme at Dalarna University are accepted subject to space in the course

Other Information
The course is given in English.

Subject:
Energy Systems in the Built Environment

Approved:
Approved 13 September 2022
Valid from 13 September 2022