

Multidisciplinary Energy Studies

Basic information

Code: SCI3038

Extent: 20-25 cr

Language: English

Professor in charge: Peter Lund

Administrative contact: [Johanna Bovellán](#)

Target group: The MES minor is offered to all Aalto University master's students interested in modern energy issues, in particular from the School of Science. International students are welcomed.

Application procedure: See detailed information at the end of the description.

Quotas and restrictions: No quotas. The minor is targeted only for master students.

Prerequisites: No prerequisites.

Content and structure of the minor

Goal

The goal of Aalto's Multidisciplinary Energy Studies minor is to educate multi-skilled students with both subject-specific know-how and integrative understanding across a range of energy issues.

Scope

Energy is one of mankind's grand challenges linked to climate change, human development, sustainability, economy, and innovations, among others. Understanding energy and its different facets requires strong systemic thinking and multiple skills.

The Multidisciplinary Energy Studies (MES) is an elective minor for Aalto University master's students interested in energy and society. It is run by the Aalto University School of Science's Energy Initiative (<http://energyscience.aalto.fi/en/>) on Otaniemi Campus in Espoo, in collaboration with other Aalto schools. MES offers a multidimensional view on energy, to understand the complexity of energy in new ways. It combines key subjects in science and engineering, economics and business, social sciences and human behaviour. Offering an integrative approach to create solutions in energy, MES is open to students of different disciplines.

The MES minor deals with topical energy themes such as sustainable energy, energy frugality, green-ICT, energy markets, carbon markets, green business, green innovations, human behaviour and energy, smart power, E-mobility, among others.

Collaboration

The Multidisciplinary Energy Studies (MES) is a collaborative teaching effort between several disciplines of Aalto University, as follows: system analysis (Prof. Ahti Salo, Prof. Afzal Siddiqui), media (Prof. Ramia Maze), energy sciences (Prof. Peter Lund), information technology (Prof. Antti Ylä-Jääski, Prof. Keijo Heljanko), business (Profs. Karlos Artto, Jan Holmström), economics (Prof. Matti Liski).

Structure

The Multidisciplinary Energy covers key perspectives on energy issues: science and technology, economics and business, social sciences and human behaviour. All students familiarize themselves with each of these three core domains.

The MES minor has a 2-level structure, as follows:

Level 1

- Introduction to energy, multi-disciplinary issues, approaches, cases and tools
- **All students will participate in the multi-disciplinary energy introduction course**

Level 2

- Introduction to energy & society, trends, transitions, sustainability; energy efficiency
- Deepening understanding of economics and business, social sciences and/or human behaviour while applying these to sustainable energy
- **Students need to cover at least two out of the three perspectives above**

Due to the multi-disciplinary character, students are encouraged to discuss the detailed contents of courses to be included in the MES minor with the professors in charge.

The extent of the MES minor is 20-25 credits. The MES minor contents are the following:

| Code | Name | ECTS | Period |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------|-----------------------------------------------------------------------------------------------|
| Level 1 Core course (5 cr) : | | | |
| Compulsory course to all students; input from several disciplines jointly. Each collaborator provides a 2-4 h introductory lecture to energy from their own perspective | | | |
| PHYS-C1380 | Multi-disciplinary energy perspectives | 5 | III-IV |
| Level 2 Supportive courses (15-20 cr): | | | |
| Students will choose one of the two following energy specific courses: | | | |
| CS-E4002 | Special Course in Computer Science | 1-10 | |
| PHYS-C6370 | Fundamentals of New Energy Sources | 5 | I-II |
| Students will choose courses from the list below: 5-10 credits per perspective (S&T, economics &business, social &behavior), with some energy relevant dimension, in total 10-15 cr. | | | |
| CS-E4002 | Special Course in Computer Science | 1-10 | |
| CS-E4100 | Mobile Cloud Computing | 5 | I-II |
| MS-E2117 | Riskianalyysi/Risk Analysis | 5 | III-IV |
| MS-E2136 | Special Topics in Decision Making | 3-6 | |
| PHYS-C6370 | Fundamentals of New Energy Sources | 5 | I-II |
| PHYS-E0483 | Advances in New Energy Technologies | 5 | III-IV |
| PHYS-E0544 | Individual Studies in Physics | 1-10 | I, II, III, IV, V |
| TU-E2030 | Advanced Project-based Management | 3-5 | I-II |
| TU-E2011 | Industrial Service Operations | 3-6 | I |
| 31C01300 | Energy and Environmental Economics | 6 | V (The course has only limited number of places for students of the minor.) |
| 31E01800 | Resource and Environmental Economics | 6 | Not lectured 17-18. (The course has only limited number of places for students of the minor.) |
| DOM-E5103 | Topics in Visualization and Cultural Analytics | 3-6 | III (The course has only limited number of places for students of the minor.) |

If you want to replace a Level 2 course with your own choice, please contact Prof. Peter Lund.

Applying to the Multidisciplinary Energy Studies minor

You can apply for the master's level Multidisciplinary Energy Studies minor at any time.

Instructions on how to apply:

- Send your contact information and approved personal study plan (HOPS) including Multidisciplinary Energy Studies via email to johanna.bovellan@aalto.fi.
- Include the list of courses which you intend to include in the Multidisciplinary Energy Studies, selected from the list above.

Please note the following:

- Aalto students from other schools than the one organising a given course, need to apply to the courses of the School of Business (31C01300 and 31E01800) and those the School of Arts, Design and Architecture (DOM-E5103), while they may freely choose courses offered by their own school. Please see instructions on how to apply to courses: [Instructions for applying](#)

- Other courses are open for Aalto University's students to register via WebOodi.
- Students should include courses of at least two out of the three perspectives of the MES minor.

Registered Multidisciplinary Energy Studies students are given preference in admission to the BIZ and ARTS courses. However, minor does not guarantee that students are admitted to all courses that are part of their study plan. Students also need to register to each individual course separately in WebOodi. Different courses have different application procedures and deadlines so read the course web pages carefully.

Please contact the planning officer or study secretary of your degree programme to make sure that they approve including Multidisciplinary Energy Studies minor in your study plan and your degree. Each student is personally responsible for obtaining this approval.