

Advanced Energy Solutions Minor

Basic information

Code: ENG3076

Extent: 25 ECTS

Language: English

Teacher in charge: Martti Larmi

Target group: All master's level students at Aalto University

Application process: No

Quotas and restrictions: No

Prerequisites: In preparing their study plan, the students are required to check that they fulfil the prerequisites for each course i.e. to take the courses in the right order.

Content and structure of the minor

Description

The Advanced Energy Solutions Minor offers students good overall knowledge within the field of energy systems, as well as further specialization opportunities in four subject areas: Industrial Energy Processes, Energy Conversion, Energy in Buildings and Energy Systems & Markets. Altogether, depending on the courses undertaken, the programme covers the most common energy conversion technologies, energy systems and processes, end use of energy, energy economics and markets, and issues related to improvement of energy efficiency in industry and communities.

Learning outcomes:

- Understand the fundamentals of energy systems
- Be able to take a holistic view to understand dependencies across large energy systems
- Analyze and evaluate existing and future challenges in the field of energy, and the role of energy technologies and processes in addressing these challenges.

Code	Name	Credits
Compulsory courses (10cr):		
AAE-1000	Introduction to Advanced Energy Solutions	5
EEN-E1030 OR ELEC-E8422	Thermodynamics in Energy Technology OR An Introduction to Electric Energy	5 5
Elective courses (15 cr):		
Energy Conversion		
EEN-E2002	Combustion technology	5
AAE-E3050	Bioenergy and Biofuels	5
EEN-E3002	Power Process Simulation	5
EEN-E2007	Energy, Environment and Emission Control	5
EEN-E1020	Heat Transfer	5
EEN-E1010	Power plants and processes	5

AAE-E3000	Advanced Energy Project	10
Industrial processes		
CHEM-E7100	Engineering Thermodynamics, Separation Processes, part I	5
CHEM-E7140	Process Automation	5
CHEM-E7160	Fluid Flow in Process Units	5
CHEM-E5145	Materials for Renewable Energy	5
EEN-E3001	Fundamentals of Industrial Energy Engineering	5
AAE-E3000	Advanced Energy Project	10
Sustainable Energy Systems and Markets		
ELEC-E8422	An Introduction to Electric Energy	5
ELEC-E8406	Electricity Distribution and Markets	5
EEN-E3006	Energy Markets	5
EEN-E3004	District Heating and Cooling	5
AAE-E3000	Advanced Energy Project	10
Sustainable Energy in Buildings and Built Environment		
EEN-E4001	Comfortable and Healthy Indoor Environments	5
EEN-E4002	Heating and Cooling Systems	5
EEN-E4003	Ventilation and Air Conditioning Systems	5
ELEC-E8124	Intelligent buildings	5
CIV-E3030	Indoor Air Quality	5
CIV-E3040	Indoor Environment Technology	5
EEN-E1040	Measurement and Control of Energy Systems	5
ELEC-E8700	Principles and fundamentals of lighting	5
CIV-E3010	Applied building physics and design	5
AAE-E3000	Advanced Energy Project	10