HÖGSKOLAN I GÄVLE

Renewable Energy Technology 6hp

Renewable Energy Technology 6cr

Fastställd av Akademin för teknik och miljö

Version

Beslutad den	**Gäller fr.o.m.**
2010-07-05	HT2015
2018-09-03	**HT2018**

Fördjupning	A1N
Utbildningsnivå	Avancerad nivå
Kurskod	ME583D
Högskolepoäng	6hp
Huvudområde	Energisystem
Ämnesgrupp	Energiteknik
Utbildningsområde	Tekniska området 100.0%

Mål

The purpose of this course is to provide a survey of the most important renewable energy resources, and the technologies for harnessing these within the framework of a broad range of simple to state-of the-art advanced energy systems. After completion of the course, students will be able to:

- Describe the fundamentals and main characteristics of renewable energy sources and their differences compared to fossil fuels.
- Explain the technological basis for harnessing renewable energy sources
- Recognize the effects that current energy systems based on fossil fuels have over the environment and the society
- Describe the main components of different renewable energy systems
- Compare different renewable energy technologies and choose the most appropriate based on local conditions
- Perform simple techno-economical assessments of renewable energy systems
- Perform and compare environmental assessments of renewable energy systems and conventional fossil fuel systems
- Design renewable/hybrid energy systems that meet specific energy demands, are

economically feasible and have a minimal impact on the environment
- Suggest the best combination of technological solutions to minimize the emission of greenhouse gases and increase the sustainability of the energy system in specific areas/regions
- Discuss how to utilize local energy resources (renewable and non-renewable) to achieve the sustainable energy system

Kursens innehåll

Introduction to Renewable Energy Technology
Solar Energy
Wind Energy
Biomass
Hydropower
Wave Energy
Ocean Thermal Energy Conversion
Tidal energy
Geothermal energy
Renewable Hydrogen

Undervisning

Lectures and projects

Förkunskaper

B.Sc. in Engineering with prerequisite in Thermodynamics 9 ECTS, Heat Transfer 6 ECTS and Fluid Mechanics 6 ECTS or a combination of these subjects of at least 15 ECTS. Documented proficiency in english B or equivalent.

Examinationsform

Hemuppgifter och kontrollskrivning

0070 Hemuppgift A 0,5 hp
0080 Hemuppgift B 0,5 hp
0090 Hemuppgift C 0,5 hp
0100 Hemuppgift D 0,5 hp
0110 Kontrollskrivning A 2 hp
0120 Kontrollskrivning B 2 hp

Betyg

A, B, C, D, E, Fx, F

Hållbar utveckling

Kursen är till övervägande del en kurs om hållbar utveckling.

Moment

0070	Hemuppgift A	0,5hp	Betyg: UG
0080	Hemuppgift B	0,5hp	Betyg: UG
0090	Hemuppgift C	0,5hp	Betyg: UG
0100	Hemuppgift D	0,5hp	Betyg: UG
0110	Kontrollskrivning A	2hp	Betyg: AF
0120	Kontrollskrivning B	2hp	Betyg: AF