

SYLLABUS FOR

Energy and Sustainability

7.5 ECTS CREDITS

COURSE CODE

TER703

APPROVAL

Approved 2008-01-17 by The Faculty Board at Gotland University. Revised 2010-xx-xx.

Valid as from Spring term 2011.

SUBJECT AND LEVEL

Energy Technology, Undergraduate level 100.

LEARNING OUTCOMES

After completion of the course the students should be able to:

- Explain basic energy concepts, conditions and systems
- Describe and reflect on the global energy situation
- Describe and reflect on the environmental impact of energy use
- Describe the conditions on sustainable energy systems
- Reflect on sustainability in a global context

COURSE CONTENTS

Course unit 1, Energy and environment fundamentals, 2.5 ECTS Credits. Basic concepts and facts on the global resource supply and use.

Course unit 2, Sustainable energy, 2.5 ECTS Credits

Conditions of sustainable development and implications on the global resource use. Future possibilities.

Course unit 3, Individual Project Report, 2.5 ECTS Credits

Analysis of energy systems from a sustainability perspective.

ENTRANCE REQUIREMENTS

General entrance requirements. Preferably, a natural science or engineering background.

TYPE OF TEACHING

The course is given as an Internet based university course in English. Exercises and assignments are submitted to the e-classroom on the Internet and participants get personal feedback from their tutors. A forum for discussion is also available.

EXAMINATION AND GRADES

Course units 1 and 2 are examined by exercises. Course unit 3 is examined by a written report. Course grades on all units are Pass with distinction (VG), Pass (G), or Fail (U).

The grade Pass requires the grade Pass or higher on all course units. The grade Pass with distinction requires a minimum of two course units, including course unit 3, with the grade Pass with distinction.

LITERATURE

Lester R. Brown, *Plan B 4.0: Mobilizing to Save Civilization*, Earth Policy Institute, 2010,

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http://www.earthpolicy.org/images/uploads/book_files/pb4book.pdf (368 p.)

David JC MacKay, *Sustainable Energy — without the hot air*, 2009, <http://www.withouthotair.com> (382 p.)

Energy Assessment Energy and the Challenge of Sustainability, United Nations Development Programme, 2000, <http://www.undp.org/> (508 p.)

Bo Lundberg, *Time to Turn*, 1996, Utbildningsradion, (155 p.), <http://www.exergy.se/ftp/timetoturn.pdf>

Göran Wall, 1977, *Exergy a Useful Concept within Resource Accounting*, Report No. 77-42, (8 p.), Institute of Theoretical Physics, Göteborg. <http://www.exergy.se/ftp/ex77c.pdf>

Göran Wall, 1987, "Exergy Conversion in the Swedish Society", *RESOURCES and ENERGY*, Vol. 9, pp. 55-73 (19 p.) <http://www.exergy.se/ftp/exse87.pdf>.

Göran Wall, *Exergy, Ecology and Democracy – Concepts of a Vital Society or A Proposal for An Exergy Tax*, 1993 <http://www.exergy.se/goran/eed/index.html>.

Göran Wall, 1997 "Energy, Society and Morals", *Journal of Human Values*, vol. 3, no. 2, Sage Publications New Delhi/Thousand Oaks/London, pp. 193-206 (12 p.), <http://www.exergy.se/ftp/esm.pdf>

Göran Wall, 2010, "On Exergy and Sustainable Development in Environmental Engineering", *The Open Env. Eng. J.*, vol. 3 pp. 21-32 <http://bentham.org/open/toenviej>.

In addition about 250 pages from other sources.