A. Syllabus for MESS09 Energy and Sustainability, 7.5 higher education credits, Second cycle (A1F)

The course was approved by the Board of the Faculty of Social Sciences, Lund University, on December 17, 2009. The syllabus was approved by the LUMES Educational Committee on March 5, 2012.

This syllabus is valid from the Autumn Term 2012.

B. Course Details

The major is Environmental Studies and Sustainability Science. The course constitutes an optional course in the 3rd term at LUMES, Lund University International Master’s Programme in Environmental Studies and Sustainability Science.

The courses MESS09, MESS10, MESS11 and MESS12 run in parallel and the student should select any two of these courses.

The language of instruction is English.

C. Learning Outcomes

Knowledge and Understanding
On completion of the course, the student shall demonstrate

- deeper knowledge and understanding of the main physical, technical and societal factors related to energy supply and demand issues, especially in relation to sustainability
- advanced insight into the complex factors influencing strategies and choices in the implementation of more sustainable energy systems.

Skills and Abilities
On completion of the course, the student shall demonstrate the ability to

- analyse the importance of different impacts on societies and the environment resulting from different energy systems
- analyse key strategies for the development of more sustainable energy systems
- read and make informed reviews of scientific texts on energy related issues
• communicate with scholars of different disciplines about the role of energy in sustainable development.

Judgement and Approach
On completion of the course, the student shall demonstrate
• an informed and critical attitude towards assessment of energy issues
• an informed and critical attitude towards different choices and strategies in connection with the implementation of more sustainable energy systems.

D. Course Content

The course discusses energy in terms of fundamental concepts such as the physical/scientific and the technological, as well as societal properties of energy systems.

In addition, the course covers the relation between energy and major global issues, energy and social issues, energy and the environment, energy and security, as well as energy and the economy.

Furthermore, opportunities in energy demand, energy efficiency and materials efficiency, energy end-use technology status and potential, economic viability, energy end-use analysis and energy scenarios are examined.

The course also addresses opportunities in energy supply, energy supply options with focus on renewable energy technologies, resource availability, environmental impacts, technology status and potential, economic viability, cost calculations etc. Also, old and new actors in the electric power market, from monopoly to de-regulation, are covered.

The final issue covered is making it happen - from policy making to implementation.

E. Teaching and Assessment

The course is comprised of lectures, seminars, tutorials, students’ presentations, and individual assignments/papers. An overall attendance rate of 80 % in scheduled sessions is required, and attendance is mandatory in the tutorials, students’ presentations, and seminars, and active participation is required in those sessions.

Assessment is carried out by means of evaluation of a quiz and the assignments/papers.

For a passing grade the student must (a) have pass mark on the quiz; (b) have pass marks on all the assignments; (c) have participated in the mandatory sessions; (d) have an adequate overall attendance rate.

Students who fail a test have the right to re-examination. An opportunity for re-examination will be offered after the end of the course. If necessary, a second re-examination will be arranged at a later date. Students who, by the same teacher, have been given fail mark twice in an exam for a course or for part of a course, have the right to demand that another teacher is appointed to decide on the grade. Students getting pass mark cannot re-take an exam or re-submit a paper to get a higher grade.
F. Grades

The grades awarded in examinations are Pass with Distinction, Pass and Fail. To receive Pass the student must fulfil the learning outcomes specified for the course. To be awarded Pass with Distinction, the student must also demonstrate an independent, reflective, well-informed and critical relationship to the research field, to the theories and to methodologies presented in this course.

G. Specific Admission Requirements

Admittance to the course requires previous enrolment and participation in the courses MESA01, MESS02, MESS03, MESS04, MESS21, MESS22, and MESS08, and the successful acquisition of at least 45 higher education credits from these courses.

H. Literature

See attachment.

I. Further Information

The course replaces MES 321.
Literature: MESS09 Energy and Sustainability, 7.5 higher education credits, (2009-12-17)

Required Readings


Issues:

*Carbon Capture and Storage:*


**Solar:**


**Algae-based biofuels:**


**Smart grids/distributed generation:**


**Fuel cells:**


