

FYSA15, Physics: Environmental Physics, 15 credits

Fysik: Miljöfysik, 15 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2008-06-11 to be valid from 2008-06-11, autumn semester 2008.

General Information

The course is a compulsory course for first-cycle studies for a Bachelor's degree in Environmental sciences and is included as an optional course in Environment and health science at Lund University.

Language of instruction: Swedish

Main field of studies

Environmental Science

Physics

Depth of study relative to the degree requirements

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

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Learning outcomes

Students should through the education

- acquire basic skills in physics to be able to understand, describe and analyse different environmental aspects and make simple calculations.
- acquire understanding of physics role in the society special within energy economizing, environment and informatics.
- acquire experiences that facilitate review and values of current and future (the possibilities and limitations of environmental) technologies and estimate of magnitudes.
- develop the ability to plan experiments, carry out measurements and calculations and present, evaluate and communicate the results.

Course content

In the course is included partly a basic overview of areas within physics that are important for the education partly applications of physics within the environmental arena.

Fields of physics: Energy and energy flow linked to thermodynamics and its main clauses. Electromagnetism with a specialisation in effect, electromagnetic fields and electricity production. Wave Physics with an emphasis on acoustics, photometry and wave optics. Further, atom and nuclear physics been included.

Environmental aspects: Energy, energy flow and thermodynamics are treated in detail to create understanding of the principles of energy transformation (wind-, water- sun and nuclear energy), the radiation balance of the soil and changes in the (global flows with the importance for weather and climates of the convection), energy flow (heat transport and heat engines) and energy use (efficiency, energy quality and energy economizing).

Thermodynamics is treated both classical and based on the concept of the photon. Within the area of electric circuits, electromagnetic radiation, its origins, spread and possible health effects are treated. Furthermore, the principles of technology that is used at electricity production are included (ac generators, solar cells et al).

The wave physics includes concepts as interference, resonance, noises and noise cancellation and their effect on environment/working environment.

Ionising and non-ionizing radiation treats alfa-, the beta and photon radiation origin, properties, detection and physiological effects.

In the course, awareness is also included about and using tools for collection, processing and interpretation of physical data.

Course design

The teaching consists of lectures, group tuition and supervision in connection with laboratory sessions and experimental exercises. Participation in laboratory sessions is compulsory. The lectures are mainly devoted to overview of theory and laboratory elements.

Assessment

The course is completed with written examination. In the final grade the results of path of the exam and the laboratory sessions in. Course part that not been completed as usual- compulsory parts and presentations- can be supplemented a posteriori by agreement with teachers and director of studies.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

Entry requirements

For admission to the course, MVEA01 or the equivalent prior knowledge are required.

Subcourses in FYSA15, Physics: Environmental Physics

Applies from V22

- 2201 Written Exam, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
- 2202 Laboratory Workshops, 6,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 2203 Seminars, 1,5 hp
Grading scale: Fail, Pass

Applies from V08

- 0801 Environmental Physics, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 0802 Laboratory Workshops, 0,0 hp
Grading scale: Fail, Pass