Syllabus spring 2015

The latest news can be found on KTH Social (www.kth.se/social/course/EG2320). It is also possible to contact the course coordinator:

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Learning Outcomes

The objective with this course is to study how the power system affects the environment and how electric power engineers can contribute to sustainable development.

To pass the course, the students should show that they are able to

- analyse and discuss how a part of the power system affects the environment, which alternatives there are, as well as the costs for reducing the environmental impact,
- critically review other environmental analyses,
- reflect upon the role of the power system in a sustainable society as well as what the student in his or her future professional career can accomplish concerning environment.

Learning Activities

The main learning activities in this course are self-studies and peer instruction.[1] Moreover, the following learning activities are offered in the course:

- **Lecture.** The role of electric power engineers in environment work will be introduced in a talk by an invited speaker in the beginning of the course.
- **Team work exercise.** In the beginning of the course, the project groups will get an opportunity to practice working together, by solving a small task in an exercise session.
- **Group supervision.** Each project group will have supervisor, with whom they can discuss where to find information as well as their findings and conclusions. The supervisor can also provide feedback on the project report. Each group can expect to meet their supervisor in total around 2–3 hours during the course; hence, the supervision time must be used efficiently.

The schedule of these activities as well as the deadlines for the examination are provided in table 1.

1. Here, peer instructions refers to learning from other students with a different educational background than yourself.

Table 1 Schedule.

Time and place	Activity
Thursday 29 January, 15–19, H1	Team work exercise
To be decided	Guest lecture
Monday 23 February, 10:00, Bilda	Deadline for submission of project reports
Monday 2 March, 10:00, Bilda	Deadline for submission of critical reviews
Monday 2 March, 13–17, E34 Tuesday 3 March, 13–17, K53 Wednesday 4 March, 13–17, V12 Thursday 5 March, 13–17, L43 Friday 6 March, 13–17, L44	Project presentation seminar
Thursday 12 March, 10:00, Bilda	Deadline for submission of individual essays
Monday 31 March, 10:00, Bilda	Deadline for resubmissions

Examination

The examination in this course consists of a project assignment, which is divided in project work and an individual essay. The project work will be awarded a score for project report, presentation and critical review respectively. Each task that is evaluated will be given 0, 1 or 2 points. All students in the project group will receive the same score for the project report, whereas all other tasks will be evaluated individually. The essays will also be awarded 0, 1 or 2 points. The grading criteria for each task are described below.

To pass the course, students must have earned at least 1 point for each task. The final grade will then depend on their total score as shown in table 2. Students who do not get any points for one or two tasks will receive the grade Fx, i.e., they will be given an opportunity to resubmit the missing tasks. Students who do not receive any points for more than two task will be given the grade F, and will have to redo the course from scratch next academic year.

Table 2 Grading for students who have received at least 1 point per task.

Total score	Grade
8	A
7	B
6	C
5	D
4	E

Project work

The participants of the course will divided in project groups by the course coordinator. The objective of the group division will be to have a mix of students with different background in each group. Each group will study the environmental impact of a specific application in a power system.

The study should cover the following:

- **Environmental impact.** How does this part of the power system affect the environment?
- **Alternatives.** What alternatives are there to using this part of the power system? What are the most important environmental aspects of these alternatives?
- **Discussion and conclusions.** How can this part of the power system be improved and would it be cost efficient compared to the alternatives? Besides costs, what other advantages and disadvantages can be identified?

Project report

Each group should report the results of their study in a project report. The main part of the report (i.e., excluding title page and list of references) should be about 4–8 pages using a standard font size and line spacing.

Project reports will be scored according to the following criteria:

- **Very good (2 p).** Reports will be awarded two points if they provide a clear overview of the environmental impact and the alternatives and provide in-depth[2] discussion and conclusions. Moreover, the report should be supported by good references and—then applicable—use efficient figures and tables to emphasise the message.
- **Good (1 p).** The report provides a reasonably complete overview of the topic, but there are parts that could have been explained better. The discussion and conclusions are reasonable, but could have been elaborated further.
- **Insufficient (0 p).** Reports that has severe shortcomings will receive zero points. Possible shortcomings would be that the report is not submitted in time (see table 1), the report is poorly written and hardly understandable, the descriptions of the environmental impact and alternatives are missing important aspects or that the discussion and conclusions are superficial and does not reveal any of the group's own insights.

Critical review

Once the project reports have been submitted, each student will be assigned two reports from other project group to read and comment. Each review should be about ½–1 page using a standard font size and line spacing. Students should also discuss the main point of their review during the presentation seminars.

The critical review will be scored according to the following criteria:

- **Very good (2 p).** The review will be awarded two points if it provides important corrections (if applicable to the report in question) or additional information to the description of the environmental impact and alternatives. The review should identify strong and weak arguments in the discussion and conclusions, and should also add further insights to the discussion.
- **Good (1 p).** A good review should point out possible mistakes in the descriptions of the environmental impact and alternatives comments and also identify strong and weak arguments in the discussion and conclusions.
- **Insufficient (0 p).** Reviews that has severe shortcomings will receive zero points. Possible shortcomings would be that the review is not submitted in time (see table 1), the review is poorly written and hardly understandable, or that the review is not providing any meaningful comments on the reviewed project report.

Presentation

Each group member will give a short (about 10 minutes), individual presentation of the entire work of the group, i.e., all presentations should cover environmental impact, alternatives as well as discussion and conclusions. The presentations are given at the presentation seminars (see table 1). Each student should attend and present at 0ne seminar, and there may not be more than one representative from each project group in each seminar. Therefore, students will have register for the seminars in advance. Instructions for how to register are given on the course web page.

The presentation will be scored according to the following criteria:

- **Very good (2 p).** A good presentation should give the audience a clear overview of the environmental impact and the alternatives and provide in-depth[3] discussion and conclusions. Moreover, the presentation should use efficient figures and tables to emphasise the message and the student should have a good ability to discuss the findings with the audience.
- **Good (1 p).** The presentation provides a reasonably complete overview of the topic, but there are parts that could have been explained better. The discussion and conclusions are reasonable, but could have been elaborated further.
- **Insufficient (0 p).** Presentations that has severe shortcomings will receive zero points. Possible shortcomings would be that the presentation is difficult to follow for the audience, missing important aspects or that the student is unable to discuss the findings with the audience.

2. Taking into account that this is a short report.
3. Taking into account the short time available for each presentation.

Individual essay

Each student should write an individual essay on the power system and its environmental impact. The essay should discuss the student's personal view on environmental problems where electric power engineers can be part of developing solutions including some reflection on what the student could do in his or her future career. The essay should be 1–2 pages using a standard font size and line spacing.

Essays will be scored according to the following criteria:

- **Very good (2 p).** Essays will be awarded two points if they clearly point out some fields where research and development in electric power engineering is important for the environment. The student should also show insights on how they as engineers or researchers can contribute to a better environment.
- **Good (1 p).** The essay provides reasonable insights in how environment aspects influence electric power engineering (and vice versa). The student should also show some insights on how they as engineers or researchers can contribute to a better environment.
- **Insufficient (0 p).** Essays that has severe shortcomings will receive zero points. Possible shortcomings would be that the essay is not submitted in time (see table 1), the essay is poorly written and hardly understandable or that the students does not reveal any own insights on how environment aspects influence electric power engineering (and vice versa) or what the student can do in his or her own career.