

Course analysis

EI2460 Batteries for Energy Storage in Electrical Systems 6.0 credits

VT22 (P3)

LAB1 – 1 cr.

INL1 – 1 cr.

TEN1 – 4 cr.

6 cr.

By:

Daniel Månsson: examiner, teacher and course responsible for ei2460.

Lectures/Seminars: 12 á 2h

Tutelage for report: 2 á 2 h

Number of students: 25 registered; 20 active

Course literature:

- Different books available via KTHB library and/or search engine, e.g.:
 - *“Electrochemistry - A Guide for Newcomers”* H.Baumgärtel,
 - *“Energy storage for power systems”* A.G. Ter-Gazarian
 - *“Energy storage”* R. A Huggins
 - *“Energy storage systems and components”* A. Rufer
- Relevant articles and reports related to subjects discussed.
- Lecture notes with reference to the above.

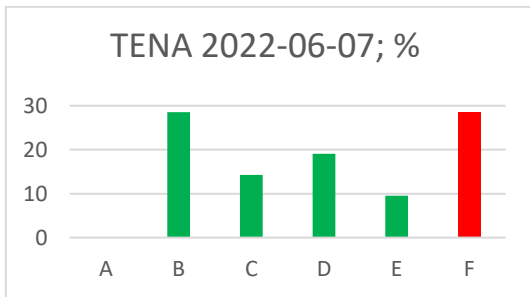
General thoughts from the course round

1. I am happy with the exam format, i.e. a mix of shorter questions and essay type questions, and the division into sections, connecting to the ILOs. It is more easily evaluated (and for me to motivate a grade) and also for the students to do Fx completion.
2. The lectures and the discussion in the classroom went well which, I think, aided the students in selecting and working with the INL. It worked well with the Q&A/tutelage seminar (“handledning”) sessions both for INL1 and LAB1. The INL1 is now individual and the topics of the INL1 presented by the students in the 3h session were both broad and interesting for all of us. The quality of the work and the presentation was good so it was a success I think that the students seem to take this task to heart. Also, the peer-review on the fellow students reports worked better this year, perhaps as the instructions were improved a tiny bit but I think this is hard to judge. Finally, I was very clear with how KTH handled suspected plagiarism and communicated what this constituted so no such was suspected. Overall I feel that the changes and things I implemented last worked well.
3. The visit to Northvolt was very well liked and the students got good contacts (meeting e.g. former students from the course). I got comments that the students

wanted more such visits/guest lectures so I will try to add another perhaps from a EV manufacturer (first year we had a person from a power utility talking).

Thoughts for next course round

- I. There is a small administrative problem with how the course is timed during the year. Many of the students on exchange programs leave during the summer to go to another university and thus those that miss the ordinary exam during June have left Sweden and miss the re-exam in August. There were a few such students this course round and I solved it by having individual oral examinations with these students. I felt this was more of a crisis management action and for the next course round (Vt-23) I will see if this can be better planned or communicated to the students at the course start.
- II. The GAMS lab is well liked and I can clearly see that the students used what they learned during LAB1 for the exam. I feel there is still room to expand LAB1 a bit to encompass a few more items to further help the students understand how battery services to the grid can be investigated.



Figur 2 1, approximately 71 % passed the ordinary exam.

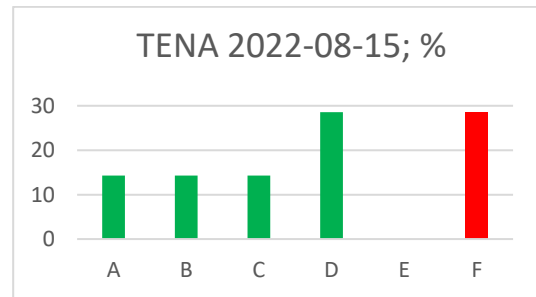


Figure 2, also 71 % passed the re-exam

Conclusion: The course was improved a bit since last year but not much, mostly in the administrative part of INL1 and the presentations and peer-review of these. I am happy with the lectures and the discussion herein and also how LAB1 and INL1 turned out. I will try to not change much next year to let the course settle a bit.