Kursanalys[1]

Kursdata

Kursens namn	Design of Permanent Magnet Synchronous Machines
Kursnummer	EJ2221
1	7.5 ECTS
När kursen genomfördes	Period 1 H14
Kursansvarig och övriga lärare	Juliette Soulard, lectures, project meetings and support Stephan Meier, tutorial Emetor KTH and FEM support remotely Mats Leksell attended oral examimation
Undervisningstimmar, fördelade på F, Ö, R, L	Lectures 13 hours (2 hours with videos) Tutorials 8 hours Project support 41 hours Project meetings 15 hours
Antal registrerade stud.	9 MSc
Prestationsgrad efter 1:a examenstillfället, i %	100%, 3 students had to complement (2 with report, one with written exam)
Examinationsgrad efter 1:a examenstillfället, i %	100%

Mål

Ange målen för kursen	The aim of the course is to understand how to make an electromagnetic and thermal design of permanent magnet synchronous machines from any given set of specifications. The knowledge is applied by designing a machine for an industrial application. See course description for learning outcomes (list of 12 items)

Kursens pedagogiska utveckling I

Beskriv de förändringar som gjorts sedan förra kursomgången	• Lecture 3 was transformed into videos from recorded lectures previous years and using Dreambroker (Juliette at conference) • Only one teacher (no one else available) • Change of FEM software from FLUX to Emetor FEM and FEMM (new tutorial and tasks adaptation). Support from Stephan Meier and simulation fees for same price as student licences for FLUX • Reports which took more than pre-booked time were commented in two sessions.

Kursansvarigs berättelse

Helhetsintryck	Best session of the course since it began! The students really played the game of designer-customer and produced great results. Students with weak English made great progress in communication.

[1] Mallen togs fram av Jan Scheffel, studierektor Alfvénlaboratoriet

Positiva synpunkter	• The students helped each other a lot as recommended by teacher. They nearly all got the idea that supporting each other was good for everybody • The students produced really good results and took initiatives finding new ways to solve task • They coped with the videos of lecture 3 (not that great sound quality) without any comment actually! • The change of FEM software to Emetor FEM was really good since it shifted the focus more on machine design compared to learning how to use the software the previous years.
Negativa synpunkter	Two students completely overshot the working hours (more than double nominal). Far too high load for single teacher, even if routine exists. Two students were extremely recalcitrant to feedback and underperformed. Not all students dared to start simulating with FEMM, the second software and this is a pity.
Syn på examinationen	It was really lucky I had booked Mats since supervision had not gone free from challenges during the course. All questions were prepared (better attention to oral presentation) and tailored to give students chance to complement what they had already shown in final report and opposition and reach higher grade.
Syn på kurslitteraturen	Not a single remark about it this year. Better explanation of why it is a bunch of references might have helped.

Teknologernas syn på kursen

Kort sammanfattning av studienämndsmöte eller studentenkäter	Only student questionnaire (7 answers out of 9 students, 78%). LEQ v3.2 ran as beta version for first time in KTH Social (a few bugs). Really positive feedback from the students and impressive Spider footprint. Hardly any comment to analyze in question part but a lot in the general questions. For most questions, one answer at +1 so course organization does not fit all students. Maybe not surprising when 2 students answer -2 about sufficient pre-requisites.
Speciellt intressanta kommentarer	• One student thought 40 hours per week for the course was nominal load (factor 2 wrong), misread course PM? • "*It let us work as a team. Studying together increase the quantity of 'learning per hour'*." Perfect! • "*one more lecture to show how to use FEMM, so it would be fair for every participant to finish more tasks*." I had not anticipated how we would deal with FEMM, even if turned out well for 6 students, a better chance to use the other program should be provided. • "*Since there is no final test which has standard answers, so the assessment of the examiner is a little bit subjective. If there involve some multiplayer evaluation system, that would be better*." This was actually done but it did not convince all the students the examination was fair. • *"I imagine this period like a pure learning material which comes out from the top like a water for 2 months. As much as you have time, fill the bucket.[…]. But "problem and project based learning" makes the water really pure and highly valuable."* Best recommendation ever !
Var förkunskaperna OK?	2 (exchange?) students had some issues. One of them had never taken a course about elmachines in English. He still wanted to take the challenge, even though I recommended he chose another course. I am amazed he passed the course (great potential once English sets in). Report writing was a real struggle for 3 students.

Kursens pedagogiska utveckling II

Hur förändringarna inför detta läsår fungerade	• One teacher for all activities is not so great when supervision challenges occur. It was great to be able to discuss situations with Mats during the course and have his opinion from oral examination. He asked first question. OK from teacher but not good enough for two students. • Students were not disturbed by video lecture but quality can be improved, and quizz were missing • Emetor FEM freed support time and changed focus of students more towards course goals. • 6 students were in full autonomy using FEMM (introduced in EJ2210 and two sets of PM files). 3 did not touch the tool. • Reports commented in Ipad adobe app gave flexibility and reduced time on task as well as reduced number of comments on language. All final reports were readable after complement. So this was a good step in right directions but several more are needed.
Förändringar som bör göras inför nästa kursomgång	A rough estimate ends up at nearly 220 hours put on the course. However the budget covers around 66 hours (incl. overheads). So the feedback optimally should be as good but takes much less time. The course disappears as such, but it will be merged together with reduced project management which went parallel into the project course in electrical energy conversion. • Re-think the project deadlines and adapt to jigsaw project (think around individual versus group work) • Use more peer-review for reports (work in pair) • Extend flipped class-room and smart usage of recorded lectures, towards web-based learning for lectures. Quizzes need to be included. • Prepare tutorial/introduction to FEMM • Use teacher in charge of power electronics or other TELPM project courses in the evaluation (fairness)

Övrigt

Kommentarer	Inputs from LEQ stuga: • Joakim uses as part of examination an oral presentation with 6 students where the opposition is presented. Final report and written opposition are examined together during meeting to grade both in a 3-step scale. • Possibility to include implementation of “light” lean or canvan project follow-up (typ. 2 meetings a week) • Use color questions or clickers (PI) to activate students during lectures

Document filled in by Juliette with inputs from Joakim Lilliesköld and Tomas Karlsson during LEQ stuga.

Instruktioner

1) Fyll i fälten nedan **inom en månad efter kursens slut**. (Viktigt krav från KTH!)
Skicka sedan till studierektor (som vidarebefordrar till prefekt och programansvarig).

2) Försök att **ge så kompletta uppgifter som möjligt**.

Tänk på att kursanalysen blir ett hjälpmedel inte bara för teknologerna, utan även för Dig som lärare.

3) Om du behöver flera rader, är det bara att trycka retur; fälten expanderar automatiskt.

4) Nomenklatur: F - föreläsningar, Ö - övningar, R - räknestugor, L - laborationer

5) Med ”prestationsgrad” avses antalet presterade poäng hittills på kursen (inlämningsuppgifter, projektuppgifter, laborationer etc.) dividerat med antalet möjliga poäng för de registrerade studenterna.

6) Med ”examinationsgrad” avses antalet studenter av de registrerade, som klarat samtliga kurskrav. Kurssekreteraren hjälper gärna till här.

7) **Teknologernas syn på kursen** skall framgå genom diskussion med dem (vilken sammanfattas i kursnämndsprotokoll) eller genom sammanställning av utdelade enkäter.

Det är viktigt att kursanalysen tydligt **visar utvecklingen av kursens kvalitet** från ett läsår till nästa.