TEK/NAT Kursrapport

Kurs	*Kurskod*	*Poäng*	*År*	*Start v.*
Elektrodynamik	5FY186	6,00	2019	36

Institution	*Antal registrerade (män/kvinnor)*	*Antal aktiva studenter (deltagit i minst en examinerande del)*
Institutionen för fysik	59 (43/16)	-

Genomströmning (i %) och betygsutfall efter första tillfälle för examination (för varje betyg som satts på kursen ange antal som uppnått detta på formen ???

Genomströmning: 94% Betyg: 3(16) 4(23) 5(16)

Hur mycket schemalagd lärar-/assistent-ledd tid har studenten tillgång till på kursen?

5FY186 (6hp): Föreläsningar och problemlösning 44 KT, Datalaborationer 8 KT
5FY147 (7.5hp): Föreläsningar och problemlösning 52 KT, Datalaborationer 10 KT

Hur är undervisningen upplagd?

Föreläsningar, problemlösningstillfällen och datalabbar

För vart och ett av lärmålen (FSR:en) i kursplanen, beskriv kortfattat hur det examineras.

redogöra för grundläggande elektromagnetisk teori i termer av Maxwells ekvationer och konserveringslagar som Poyntings teorem

tenta

beskriva grundläggande elektromagnetiska fenomen som t.ex. induktion och förskjutningsström

tenta

förklara grundläggande egenskaper hos elektromagnetiska vågor i vakuum, i materia och i vågledare

tenta och datalabbar

lösa elektromagnetiska problem inom centrala områden som induktion, vågutbredning och strålning

tenta och datalabbar

lösa Maxwells ekvationer med olika randvillkor

tenta och datalabbar

använda begreppen elektromagnetiska potentialer och retarderade potentialer för att analysera elektromagnetiska problem

tenta

använda programmet Comsol Multiphysics för att numeriskt lösa elektromagnetiska problem

datalabbar

visa förmåga att göra bedömningar med hänsyn till vetenskapliga och etiska aspekter vid presentation av resultat vid laborativt arbete

datalabbar

Beskriv hur betygssättningen på kursen fungerar. (Vilka betyg ges på kursen och hur sker bedömningen, dvs vilka delar betygssätts och hur vägs de samman? Finns det skrivtliga betygskriterier och/eller lärmål (FSR) för de olika betygen?)

Betyg bestäms av tentamensresultat.
Betygsgränserna var:
3 - 8 poäng, 4 - 12 poäng, 5 - 16 poäng (max 20).
Labrapporter/muntlig redovisning får antingen G eller icke godkänt U

Samläses denna kurs med andra kurser??

Ja

Om ja, hur många?

1

Hur stor andel av kursen samläses?

80%

Samläser flera program denna kurs?

Ja

Om ja, hur många?

3

Arbetar studenterna i projektform på kursen?

Nej

Om ja, uppskattad omfattning i poäng på projektdelen:

Antal projekt som varje student deltog i:

Antal studenter i projektgrupp:

Förväntades studenterna använda en projektmetodik för dokumentation och styrning (tex LIPS)?

Hur skedde indelning av studenter i projektgrupper?

Har studenterna uppmanats föra projektdagbok?

Om ja, Har dagboken utgjort grund för examination?

Kursens samverkan med forskning

Lärare som bedriver forskning (>25% av tjänsten) är aktiva på kursen

Annan samverkansform, nämligen:

Kursens samverkan med näringsliv eller offentlig verksamhet

Ingen samverkan med näringsliv/offentlig verksamhet förekommer på kursen

Annan samverkansform, nämligen

Genomförda förändringar till detta kurstillfälle

Uppgradering av labinstruktioner

Förändringsförslag från föregående kursrapport

Uppgradering av labinstruktioner

Lärare

Information om inblandade lärare

Kursansvarig

Michael Bradley

Antal övrig personal som ej föreläser

2

Antal övriga föreläsare

Hur stor del av den schemalagda tiden på kursen undervisas av forskande lärare (dvs lärare med mer än 25% forskning i sin tjänst)?

100%

Hur stor del av den schemalagda tiden på kursen undervisas av lärare verksamma i näringsliv/offentlig verksamhet (dvs lärare med mer än 25% av sin tjänst förlagd till näringsliv/offentlig verksamhet)?

0

Kursvärd.

Totalt antal svarande

32 (5FY186: 14, 5FY1147: 18)

Sammanställningsdatum

200806

När genomfördes kursvärderingen?

Efter genomfört första examinationstillfälle

För varje lärmål på kursen ange hur stor del av de studerande som uppger att det har behandlats på kursen - ange svaret i procent på formen
har behandlats/har inte behandlats/vet ej

redogöra för grundläggande elektromagnetisk teori i termer av Maxwells ekvationer och konserveringslagar som Poyntings

87/10/03

beskriva grundläggande elektromagnetiska fenomen som t.ex. induktion och förskjutningsström

84/13/03

förklara grundläggande egenskaper hos elektromagnetiska vågor i vakuum, i materia och i vågledare

78/19/03

lösa elektromagnetiska problem inom centrala områden som induktion, vågutbredning och strålning

75/19/06

lösa Maxwells ekvationer med olika randvillkor

81/13/06

använda begreppen elektromagnetiska potentialer och retarderade potentialer för att analysera elektromagnetiska problem

78/16/06

använda programmet Comsol Multiphysics för att numeriskt lösa elektromagnetiska problem

81/19/0

visa förmåga att göra bedömningar med hänsyn till vetenskapliga och etiska aspekter vid presentation av resultat vid laborativt arbete

72/16/13

Sammanf.

Sammanfattning av åsikterna i kursvärderingen - positivt och negativt kring föreläsningar, seminarier, grupparbeten, laborationer, examination etc

1: Was your prior knowledge (in physics and mathematics) sufficient? Ja: 29, Nej: 2
Kommentarer:
a. yes
b. I think the above problem is very good. we should have some mathematical and physical foundations.
c. I have learned electrodynamics before in Chinese
d. no comments
e. I have some knowledge.
f. I think we need study more.
g. I have some prior knowledge.
h. no comments
i. I could learn more

2: How has the teaching been?
a) Lectures: medel 4.71 (max 5)
Kommentarer:
a. The content on the lectures have been informative and easy to follow.
b. Michael Bradley is amazing at what he does. His command of the subject is phenomenal.
c. good
d. Bradley is a fantastic lecturer and have a great way to inform and teach.
e. The lecture is very good
f. The teacher explained in detail, patience
g. Michael was great, as always. Sometimes I felt we spent too much time on algebra and solving integrals but that is hard to avoid I guess. Personally I think it is a lot more valuable to spend time on the conceptual understanding.
h. It's good.
i. It is comprehensive and detailed.
j. It's good.
k. no comments
l. it is very good

b) Problem solving sessions: 4.42
Kommentar:
a. I did not attend any problem solving sessions
b. The problems solved have been the ones that have felt very central to the course. This in combination with excellent solutions have made the problem solving sessions just great.
c. good
d. I would have liked to see a more introduction to the problems solved before going in to the solutions, but overall the problem solving sessions were really helpful.
e. It is very good, we can understand knowledge more clearly
f. The problem is moderately difficult and the teacher explains clearly
g. Again, many of the problems are quite long and the problem solving sessions ended up being a lot of algebra and integrals.
h. It's very challenging.
i. It is very good
j. It's very challenging.
k. no commens
l. Guided by the teacher, I could solve many problems

3: What do you think about the course literature? 4.28
Kommentar:
a. Did not use it very much
b. Griffiths introduction to electrodynamics is simply a great book.
c. Great writer, but docking some points for skipping steps at times.
d. good
e. Griffith is a really good author and is easily read.
f. Course literature will give us a better understanding of the course
g. To be honest,I haven't read the book very much,it's enough for me to analyze my course notes.
h. It's sufficient.
i. The knowledge points taught by the teacher are comprehensive and detailed.
j. It's sufficient.
k. no comments
l. The knowledge points taught by the teacher are comprehensive and detailed.

4: How has the availability of information and material been? 4.68
Kommentar:
a. Could use some better structure in cambro
b. good
c. Good updates and easy to acess information.
d. Very reliable
e. Reference materials, exercises and previous exam can be found in Cambro.
f. It's very specific and plentiful.
g. I can learn more from the information.
h. It's very specific and plentiful.
i. no comments
j. These are significant.

6: Is the vector analysis part sufficient? (For those taking 5FY147)
Kommentarer:
a. yes
b. yes
c. Yes, there was plenty of time for lectures and practices.
d. yes,it is sufficient.
e. Yes
f. Yeah, it sufficient.
g. sufficient
h. Yes, it's sufficient.

i. Yes. It is sufficient.
j. Sufficient

5: What is your opinion about the examination form?
Kommentarer:
a. I really like when its both written exam and labs combined.
b. It's fine.
c. It's standard.
d. I like the exam
e. good
f. I think the examination questions were of reasonable subjects but I think it was alot harder than the previous exams that were available to practice on. For example, the dispirsion relation question had been for real mu, eps, and sigmas before but this time with an imaginary character. The waveguides from earlier years had been rectangular, just as the examples in both lectures and the book but was cylidrical on the exam. Since alot of the problems on the exam had a twist on them it was alot harder and more tesious maths to do under time pressure.
g. Good
h. Good, doesn't stress the student and it is fair to test the general knowledge about the course.
i. The exam format is very good and can inspire students to think better.
j. I think that the usual grades(like excises) can be used as part of the final grade(maybe 10%)
k. Good!
l. I think it can stimulate our thinking.
m. Good to allow a handbook be with me.
n. It is very good.
o. I think it can stimulate our thinking and understanding.
p. I think it is great.
q. It's very well.

6: What is your opinion about the course content, something that ought to be added or removed?
Kommentarer:
a. It's fine.
b. Maybe more focus on retarded potentials?
c. good
d. If the exam is to contain twists of what we are going through at lectures these should be included in the lecture material.
e. It was fine
f. I have no opinion
g. Add:application of boundary conditions in different coordinates
h. The parts about Impedance, omega-j-method and Transistors felt a bit out of place. There were almost no exercises about these subjects and they weren't featured in any of the exams. I don't know if the lectures about these subjects are there just as an introduction before later courses, if so then maybe you can mention that.
i. I think the relativity should be add. The knowledge of electromagnetic field should be more explained.
j. no.
k. I think the relativity should be added. The knowledge of electromagnetic should be more explained.
l. I think it is great. I have no opinions.
m. Nothing.

7: Opinions and suggestions for improvement:
Kommentarer:
a. As comment in exam form.
b. Nope
c. Classes should be in a variety of forms
d. Experimental class is too hasty
e. Some figures in Michael's Problems on electrodynamics would be both nice and helpful. I found the parts about wave guides, gauge choices and retarded potentials really hard to grasp conceptually. Not sure how it could have been done better though.
f. I don't have any suggestions.
g. It is excellent.
h. I don't have any questions.
i. I have no opinions?
j. It's very good.

Laboratory sessions:
8. Was your prior theoretical knowledge sufficient?: Ja: 23 Nej: 8
Kommentarer:
a. Prior knowledge was not even necessary since the lab instructions were so easy to follow. With the introduction to comsol you get everything you need.
b. yes
c. I have learned some theoretical knowledge before.
d. I have never been exposed to Comsol
e. We should have basic knowledge.
f. sufficient
g. We should have basic knowledge.
h. no comments
i. Sufficient

9. How has the availability and function of the computers and program been?: 4.34
Kommentarer:
a. Not enough time for the labs
b. good
c. Computer is very practical
d. It's enough
e. It's available.
f. It is good.
g. It's available.
h. no comments
i. good

10. How has the supervision been?: 4.52
Kommentarer:
a. good
b. Lucas was great
c. Supervisors are very good, solve problems for us in a timely manner, teach us knowledge
d. Nothing
e. There wasn't really that much time for supervision, only the oral presentations. However, both Lucas and Claude did a great job.
f. He helps us solving questions.
g. They are kind and very enthusiastic to help me solve the problems.
h. He helps us solving questions.
i. no comments
j. good

11. What is your overall opinion about the laboratory task?: 3.91
Kommentarer:
a. Would be great with time to ask questions. Think that the most of the time, the supervisors needed to do the oral examination
b. good
c. It was one question on the last lab that was weird
d. I think the lab is very good, it is very advanced
e. Interesting but some hasty
f. I think it can help us know more know knowledge.
g. A little unsatisfied.
h. I think it can help us know more knowledge.
i. no comments
j. it's good.

12. Do the labs give enough introduction for you to be able to use Comsol Multiphysics when needed in the future?
Kommentarer:
a. I think so
b. Yes.
c. Yes
d. I don't know
e. yes
f. I think so, atleast for very simple problems
g. Yes
h. Yes, the inteoductory lecture was enough to prepare for the labs.
i. I think these introductions are not enough, if I need to use it later.
j. Yes,After all, it's just an enlightening course.
k. I'm not sure how much new features I learned in this course but I guess it is always good to freshen up your Comsol skills.
l. Yes, it's enough.
m. Yes
n. not very enough.
o. Yes, it's enough.
p. yes
q. It is enough.

13. Do the labs improve the understanding of electrodynamics?
Kommentarer:
a. Yes
b. Yes
c. Yes
d. Yes
e. A bit
f. yes
g. Slightly
h. Yes
i. Yes, the visuals were very helpful and the software in general is great.
j. Yes, it gives me a better understanding of electrodynamics
k. Not really
l. Yes
m. Yes!
n. Yes, especially about skin effect and wave guides.
o. Yeah.
p. Yes
q. Yes, it help me a lot.
r. Yes.
s. yes
t. It improves me a lot.

14. Opinions and suggestions for improvement of the computer labs:
Kommentarer:
a. I think the lab is very suitable for us to learn and experiment. I have no opinion about the laboratory.
b. More details will be grateful
c. The supervisors stund ni the answers to all the lab questions
d. I would like to see a stronger link between the Comsol labs and the problems encountered during lectures and in problems. Some of the labs consisted most of "I can see this happening, It is way too complicated to motivate/understand analytically, here are some colorful pictures." An example of how I would like the labs to be is the one about the graphite cylinder inside a solenoid, that lab was a perfect balance between simulation and theory and you could see what limitation both approaches/methods have.
e. I don't have any suggestions.

f. It is very good. g. I don't have suggestions. h. no opinions. i. Nothing Universitetsgemensamma frågor: 1. Kursens kvalitet: 4.25 (utav 5) 2. Antal nedlagda timmar per vecka: 18 3. Bemötande: 4.66
Lärarnas synpunkter på kursens innehåll och genomförande Teoriinnehållet är standard för en kurs av den här typen. Verkar ha fungerat relativt väl. Datorlabbarna bör kanske ges mer tid och fysiken i dem behandlas mer i samband med teorin.
Förslag till nästa kurstillfälle - ange vem som ansvarar för förändringen Om möjligt utvidga tiden till laborationerna och behandla fysiken runt dem mer i samband med teori. Kursansvarig.
Bör kursplanen ändras till nästa kurstillfälle - vem ansvarar i så fall för att förändringen görs? Nej.

Granskn.

Granskare lärare (CAS-identitet) mibr0002 [Michael Bradley]
Granskare student (CAS-identitet) poso0003 [Pontus Söderström]
Granskare studieadministratör (CAS-identitet) gaaaln03 [Gabriella Allansson]
Eventuella kommentarer på granskningsprocessen