

Kursanalys för SK2560

Datum för kursanalysen	2020-12-16
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Sida 1: Kvantitativ analys

Läsår:	2020
Läsperiod(er):	1

Kursansvarig:	Haichun Liu / Hjalmar Brismar (examinator)
Lärare: Föreläsare	Haichun Liu, Ali Elshaari
Övningsassistenter	Haichun Liu, Ali Elshaari
Labbassistenter	Haichun Liu, Chinmaya Venugopal Srmbickal
Övriga inblandade lärare	

Antal registrerade studenter	19 master students, 1 PhD student (FSK3560)
Prestationsgrad, * % (t.o.m. ovan datum)	93.3 %
Examinationsgrad, ** % (t.o.m. ovan datum)	90 % (100%)

* Antalet presterade poäng hittills på kursen dividerat med antalet möjliga poäng för de registrerade studenterna vid gällande datum.

** Andel studenter av de registrerade som klarat samtliga kurskrav vid gällande datum.

Sida 2: **Kvalitativ analys**

Kursens pedagogiska utveckling

Redogör för eventuella förändringar införda utifrån förra årets kursanalys.

The course covers from the most fundamental physics end to the practical nanophotonics and bionanophotonics application end, by emphasizing the links between the two ends. This makes the course relatively challenging for the students.

One of the course objectives is to make the students able to understand and interpret the very frontline of research and development of nanobiophotonics for optical sensing and diagnostics. In order to better achieve this goal, I introduced a research article presentation section. Each student was to select a high-impact article published in the last five years, or I suggested an article to them. This section was very appreciated by the students.

Studenternas syn på kursen

Redogör för studenternas syn på kursen (dokumenterad genom kursenkät, kursnämndsmöten, intervjuer och/eller annan lämplig metod).

This year this course was given in a hybrid class, on Zoom and in a classroom on place. 4 lectures out of 15 were given by pre-recorded videos. Due to the Covid-19 pandemic, most students took the lectures online. So I was not able to do small talks with students during lecture moments and pauses as the former teacher did in previous years. But I did small talks with them during the experimental lab sessions about the contents (course materials and lecture notes), speed of lectures, and homeworks.

After completing the course, the students answered a questionnaire. On a scale of 1-5, the students' assessments are on average 3.2, concerning both relevance / content and presentation of most of the elements. The lectures received an average grade of 3.0. The laboratories received an average grade of 4.0.

The general response is that the students find the course interesting but improvements need to be done in the aspects of course communication, organization and structure. These aspects are largely related to the fact that I was course responsible for the course for the first time, and took over the course on relatively short notice. Next year, I will take this feedback into account and these matters will be properly adjusted. Some students think the speed of the lectures was too fast. Some students think the computer lab needs better instruction. Most students think that the confocal lab was fun. Presentations of scientific articles by the students

themselves were an appreciated feature among most students on the course.

Below are comments from the "Course evaluation" questionnaire (9 participants):

What is(are) thing(s) that you appreciated specially/particularly about the course

- The interesting material
- Lab 2 was interesting;
- That we hade homeworks, ut wars good.
- The subject was incredibly interesting and i really appreciated the confocal microscopy laboratory, it was really fun
- Homeworks and labs made me work continuously.
- I liked the article presentation, it was a lot of fun.
- Homeworks were good
- The confocal lab and that the informations from each lecture was connected to the new information
- The second lab was very good and a lot of fun.

How do I improve the course

- Explain more things from the book
- It would help if the ppt slides had more text on them so that they would be easier to go back to after lectures; it would also be better to have maybe 3-4 homeworks that cover larger parts of the course rather than having 9 short ones; having some examples of problem solving in the lectures would also be beneficial. Lab 1 definitely should have more instructions.
- More structure. You need to know, as a student what you need to do. Everything was very fuzzy and the exam was very different from former exams etc.
- The course needs better structure and organization! Give reading instructions before the lectures, not after. The lessons need to go through the important content of the course better.

- Clearer about grading from beginning. Maybe adding lecture notes that are not just the powerpoint.
- It could be better structured, with more clear instructions. There were a lot of confusion about homeworks, labs etc.
- would have liked if it is possible to go through calculation examples in class
- More time on understanding how to calculate with the given information. The homeworks was very hard since we didn't know where to start. It would also be benefiting if the instructions were clearer.
- I though you did a really good job actually! But if i were to say something, maybe explain concepts a little more thoroughly during lectures that are coupled with the homeworks. For sometimes you could feel a bit lost with what to do.

Are there any overlaps in the course content as compared to previous courses that you read

- A few courses such as solid state physics
- There were some overlaps but not too much
- No
- Yes, partly with the course Experimental Methods in Molecular Biophysics SK2520 regarding fluorescence and certain imaging and microscopy techniques
- No
- The confocal lab is done in the course SK2500 as well. But it is a very fun lab!
- no
- No

Kindly write some general comments, reflections and suggestions about the course!

- I liked it!
- Things such as grade requirements should be communicated to the students. Overall the course should be better structured and planned.
- Better structure over all and no need to plot or code things in a written exam. The exam

was way too big for 5 hours and for 3 HP. There should be a connection between HP and the exam

- Organize the course better and to review how the concepts are explained! And especially, you need to improve communication with the students, because it was lacking a lot and often it was very unclear what we needed to do and to know for the course.
- Thank you for this course
- It could be great to see some examples during the lectures, now it were just a lot of formulas and expressions and sometimes you would not know how to use them. Or why you use them.
- it was a really interesting course, i like it a lot. The rest is under the question "How do i improve the course".

Kursansvarigs syn på kursen

Sammanfatta hur utförandet och resultatet av kursen gått, samt tolka/analysera studenternas syn på kursen.

Both based on the questionnaire and direct contact with the students, many students made complaints on the course communication, organization and structure. This feedback will be considered, and adjustments will be done for next year (see also comment above).

This year two teachers were involved in lecturing. Most lectures (11) were given in a hybrid class on Zoom and in a classroom on place and 4 lectures were given by pre-recorded videos. The place and time of each lecture were early scheduled and given in the first lecture, and an announcement about the coming lecture was always given at least one day in advance in Canvas. However, the students seemed still not used to having changing types of lectures. Instead, they seemed more used to a fixed classroom on place or an online meeting room. This may have been a reason for the complaint regarding the organization of the course.

Regarding the course structure, we used almost the same structure and lecture notes as used by the former teacher last year, which was proved to be comprehensive and enjoyed by the former students. However, this year we received very different assessments. We thoroughly analyzed the reason and compared the teaching with last year, and our analyses are given below.

This course covers many physical concepts and mathematics, which is challenging for students, especially for those who don't have a physics background (such as students studying in the Medical Engineering program). It demands high concentration of the students in the lectures, high-quality interaction between teachers and students, and a large amount of reading after the lectures, in order to achieve good learning outcomes. This year the changing of the type of lecturing from a classroom-based one to online, due to the Covid-19 pandemic, put forward higher requirements on teaching, and really disturbed the teaching and learning activities. The course coordinator discussed with several colleagues and friends about online teaching experience and personal learning experience. We noticed that a natural reaction of students in an online lecture when encountering problems was to "escape" but not to ask questions, intending to resolve the problem by themselves by more reading after the lecture. But for a difficult course like this one, involving some physics and mathematics that already demands a lot of reading, questions would be accumulated, and it would further increase the burden of students, which makes the course even challenging.

In online teaching, the natural interaction between teachers and students that physical presence can provide was lost, and the feedback channel by free conversations with students, available in a normal classroom, was also lost. In all the lectures, all students' cameras were switched off, and it became very difficult especially for us, as new and relatively unexperienced teachers, to observe the response of the students and so to adjust the content and pace of the coming lectures. And it was very difficult to get students active in Zoom lectures, even if the students were always encouraged to ask questions. In a normal classroom, the teacher can easily ask any student any relevant questions to actively collect feedbacks, but it is hard to do so online.

The low-quality teacher-student interaction and the blocking of the feedback channel made us unable to fully identify the problems and address them. Only after the course coordinator did small talks with students during experimental lab sessions (in week 38, the middle of the course), we could get some feedback regarding the content and pace of the lectures. Then I made changes accordingly in the remaining lectures.

Despite the complaints on the course organization and structure, the course has a relatively high degree of examination (90%). Of those who took the exam, 100% passed.

Planering inför nästa kursomgång

Redogör för eventuella förändringar du planerar att göra inför kommande kursomgång.

To address the students' comments in the questionnaire and based on the above analyses, improvements will be made for the next course round in the following aspects:

1. Improve foresight and clarity regarding course requirements. Particularly the grade requirements will be better communicated and emphasized at the beginning of the course.
2. To help students better grasp the structure of the course, in addition to providing written reading instructions on the course website before the lectures, we will start lectures in each new topic with a short goal description.
3. We will strive for an increased amount of interactive elements in the lectures. If the pandemic conditions prevail, I will make a suggestion to the students to have their cameras on during the lectures.
4. Two Q&A sessions will be scheduled in the course next year. Some calculation examples will be included in the Q&A sessions.
5. A more detailed instruction for the computer lab will be provided to students. It turned out that too much freedom in such a task made students feel upset and frustrated.
6. The experimental lab (confocal imaging) will be further developed by including an upconversion optical imaging part, the research area of the course coordinator. This will even better address the third course objective.
7. Important concepts will be given more focus in the course and will be explained more thoroughly during lectures.