

## **Course analysis evaluation** **Laser physics SK2411, IO2659, VT-2011**

Lecturers: Valdas Pasiskevicius, Min Qiu, Min Yang.

Problem-solving assistant: Niels Meiser.

Labs: Fredrik Laurell, Kai Seger, Nicky Thilmann.

Number of registered students: 35.

Number of students who took exam: 36 (one student from previous years).

### Changes made in the course for VT-2011. Effects of changes.

There were several changes in the Laser physics course compared to previous years:

1. One solid state laser setup has been acquired for the labs to accommodate larger number of students. This indeed proved necessary and timely investment which allowed to increase the efficiency of the lab exercise substantially.
2. In order to make problem solving sessions more productive we introduced nonmandatory self-preparation home tasks. In consideration of further mandatory home tasks we included a question into student survey on this. The response was not very enthusiastic though. The comments in survey, on the other hand suggest that the problem solving sessions which were preceded by home tasks, were more efficient indeed. Therefore in the future we will continue and expand this practice.
3. A new lecturer Min Yan has given some lectures instead of Min Qiu.
4. Clear requirements for the exams were stressed many times and we managed to avoid slight misunderstandings of the previous years.

### Results of the student survey

The anonymous survey has been conducted at the end of the course just before the examination. The survey consisted of 12 questions soliciting opinions on lectures, exercises, labs, textbook, methodical aspects of the course and students' motivation issues. The results are shown in the graph below. The scale 1-4 (4 maximum) reflects the degree to which students agree with particular statement in the survey. The bars represent averaged responses to the questions.

#### Motivation:

It is obvious that students think that the course is important for their education and that there was strongly perceived self-motivation to study the subject. Most students disagree that the motivation to attend the course was purely for the purpose of collecting points. It is understandable: Laser physics course is not the course where points are obtained in the easiest way. Motivation was obvious during lectures with students eagerly participating in the process.

#### Lectures:

Lecturers and course material distribution has been evaluated very positively. Especially it is reflected by the large average score given to the dialogue between students and lecturers.

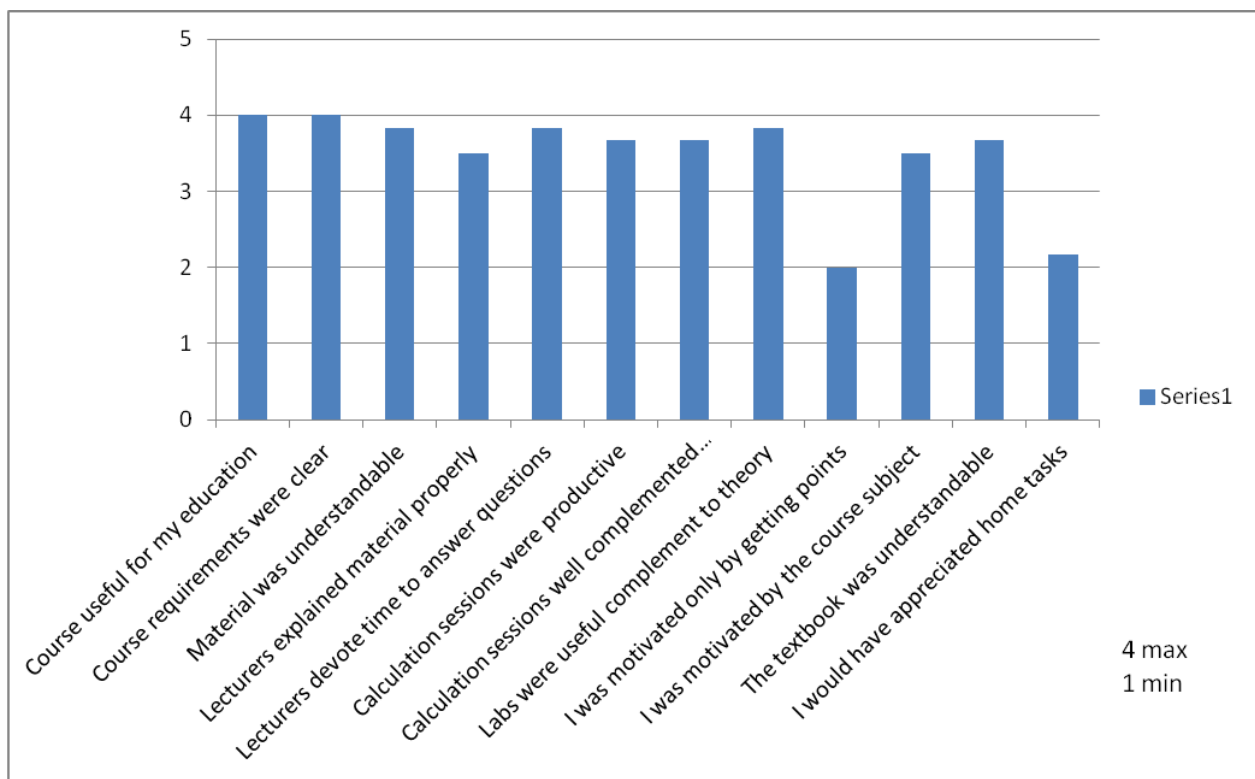
Said that we will pay attention to the comments to further improve understanding of the material.

#### Textbook:

Students gave it the score above average. Individual discussions with students revealed positive response. The book is one of the most competent master-level textbooks on the subject.

#### Labs and problem solving practice:

Students gave rather high scores to the problem solving exercise sessions. Following previous year suggestions we offered additional individual home tasks for students to better prepare for the problem solving sessions and for the exam. Fortunately the textbook contains extensive selection of problems and some solutions or hints for students. Unfortunately we have to do the survey before the lab practice this year due to tight schedule. However, based on private discussions with students during the labs it was clear they very much appreciated this component of the course.



#### Considerations by the lecturers

The class VT2011 was record large and we had to rebook to larger auditoria. But everything seemed to work out well. The additional lab setup helped to increase the throughput of the labs using the same lab-assistant time. The investment paid off. Our new lecturer needs to more emphasize physical importance of the mathematical developments which were

presented well. We will work on this before the next course. Moreover, there is probably a need to be more specific about the required levels of understanding and knowledge corresponding to different outcomes at examination.

Comments by students:

About the lectures:

“In some lectures only mathematical derivation were given with too little explanation of physical phenomena”.

“The new lecturer did not really explain things”.

These comments have been taken into account.

About the textbook:

“Sometimes it gets too deep into useless detail”.

“Great book! Easy to read with good problems to solve.”

About the exercises and home task assignments:

“The problem solving sessions were not productive since no one prepared the home tasks, but then it was useful...”

“When we have prepared ourselves for the tasks, then the problem solving sessions became most useful”.

“The problem solving was already taken partly as homework...”

So the homework tasks did help and we will continue along this path.

Suggestions:

“If more time (one more week) can be given to students for preparing for the exam it can be more helpful”.

This is probably true considering that KTH allocated only one week for preparation and then students have other exams as well.