Course analysis evaluation
Laser physics SK2411, IO2659, VT-2009

Lecturers: Valdas Pasiskevicius, Min Qiu
Problem-solving assistant: Gustav Strömqvist
Labs: Fredrik Laurell, Kai Seger, Nicky Thilmann
Number of registered students: 28
Number of students who took exam: 27

Changes in the course made for VT-2009
There were several changes in the Laser physics course compared to previous years:

1. Organizational change – the course SK2410 was given new code SK2411 and number of points equalized to that given by IO2659. So the KTH Physics students get fair treatment.
2. We acquired an additional solid state lab setup in order to increase throughput of larger number of students.

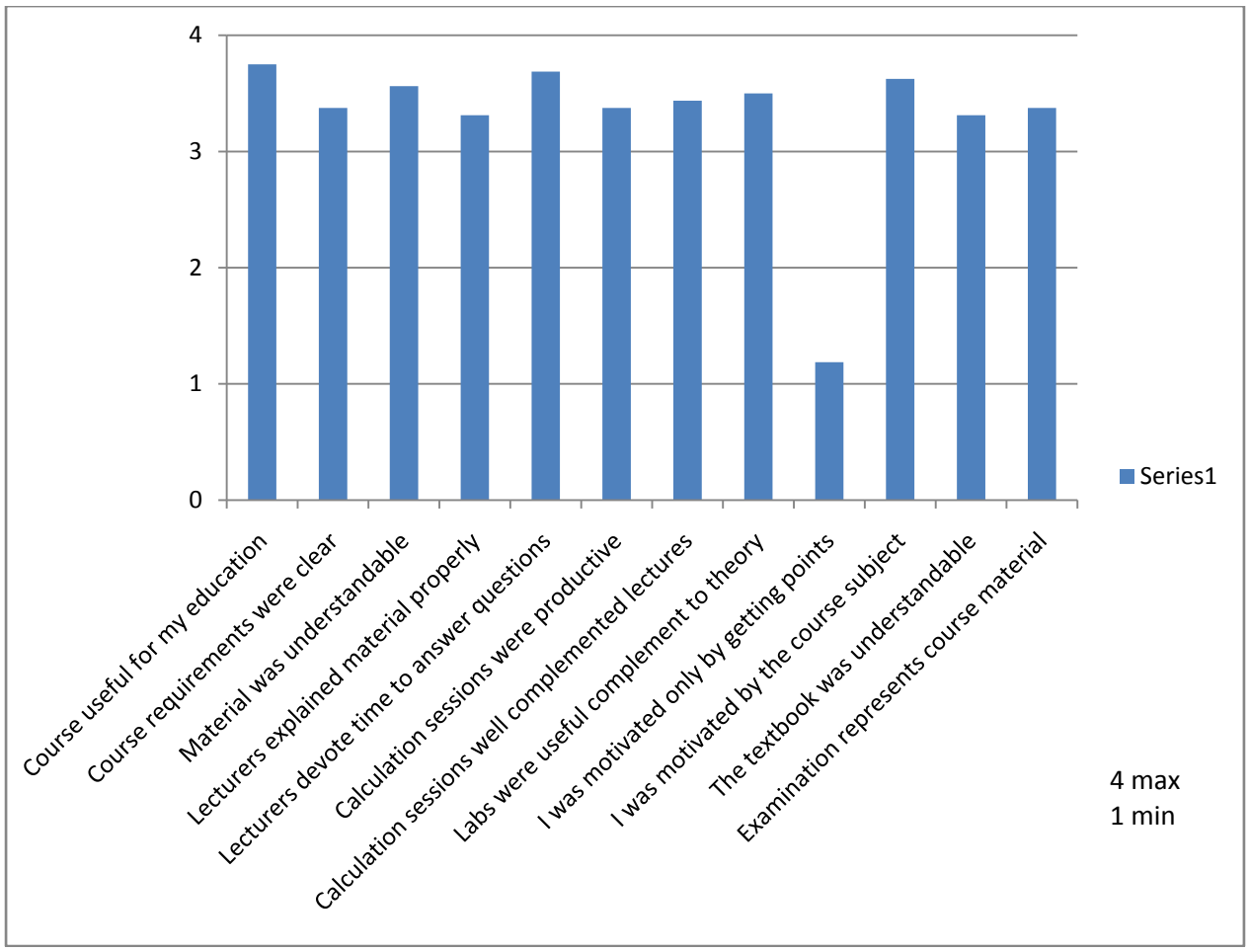
Result of the student survey

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, excercises, labs, textbook, methodical aspects of the course and students' motivation issues. The results are shown in the Fig. 1. 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.

Textbook:
Students gave it the score above average. Individual discussions with students revealed very positive response. On the other hand the methodical layout and very competent and rather insightful narrative in the book was also well appreciated by the students.



Labs and problem solving practice:

Students gave rather high scores to the problem solving exercise sessions and especially to the labs. In fact, the lecturers were asked to provide additional problems for individual practice. Fortunately the textbook contains extensive selection of problems and some solutions or hints for students.
New and clear lab-report instructions prepared and introduced.
More labs
Problems for home solving beforehand.

Examination:
As the survey has been performed just before students started working on examination tasks, the response was rather cautious.
Confusion about the exam aids. Website

<u>Considerations by the lecturers</u>

Summarizing the experiences during this run of the course it is fair to say that textbook change was a successful move. The increased number of students due to integration of two courses also has had a positive effect on more lively discussions and participation of the

students and larger variety of questions. It should be noted however that the preparation level of the students from different programs was notably different and that has to be taken into account in the planning of the lecture material and prompting students to refresh their previous knowledge especially in quantum mechanics and atom and molecular physics. It might be useful to provide in advance home assignments for independent studies and reorganizing problem solving session in the way which would be conductive for more active student participation in these sessions.

Comments by students: “This course gives knowledge about physics of lasers which was not much mentioned before. I like it.” “The first part, about interaction between photons and material is difficult for me, but it is also a motivation. The gas pumping with electrons is quite hard to understand.”
“I enjoyed the course. I just wish I had more time to read the book.”
“Directions as to what aids were allowed and what not where not clear from the start of the course.”
“It could be specified more clearly about which parts are included in the exam and which not.”
“Could you please inform of the exam rules at the beginning of the course.”
“Prerequisites for the course were a bit unclear from the website.”
“8 o’clock is not my time of the day but especially not with ppt lectures” (we did not use ppt?)
“Great book! Easy to read with good problems to solve.”
“Continue on with the great course! But skip ppts, old-fashioned blackboard is much better.”
“The course was understandable although it was a large amount of topics covered.”
“Probably one should be encouraged to calculate problems at home first before discussing them in the exercise session.” “Would be nice to have more labs.” “Book: well explained topics and examples.” “One of the best courses within the photonics master program.”