

Course analysis for Basic Statistical Mechanics, FYSB12 and AFYD03 HT 2019

Course responsible: Claudio Verdozzi

Other teachers: Melvyn Davies, Anders Irbäck, Timo Kerremans, Timmi Jörgensen, Daniel Nilsson, Emma Simpson, Anna-Lena Sahlberg

Number of students registered: 87 (in Live@lund)

Course representative: Adam Asaad (adam.asaad76@gmail.com)

Grades: U - 1, G – 32, VG - 25.

Analysis

I. Summary of the course evaluations

Total number of responses: 26, of which 2 from the teacher student program

Short summary of the results: Overall the students were very satisfied (grade 4,6) with the course. There was some spreads in most answer distributions, and the answer frequency was rather about 33% of the registered students participated. As a consequence, it not easy to tell whether the answers are representative for the course. It should however be mentioned that out of the 86 registered, only roughly 60 followed the lectures and labs continuously.

The overall average impression of the lectures ranged from satisfactory to excellent, with an average close to 5 out of 6. The response for the computer lab was also positive, and comparably for the experimental lab. A similar feedback was obtained for the exercise sessions: the exercises were considered useful practice for the exam. The textbook was judged on average non-favorably, while the lecture notes were considered much more helpful, but in need of typing. Exam, hand-ins and clicker sessions were judged very positively. The students felt they understood the whole material, and they thought they had the necessary mathematical background. Some students, as well as a lower pace in many of the lectures, suggested the adoption of a different textbook. The supplemental instruction (SI) made available to the students was judged very favorably.

II. Comments and reflections from the teachers

The course in many ways has met a considerably increased appreciation by the students. The average score in the present evaluation was distinctly higher than in the previous one.

Concerning the computer lab, from the teachers point of view it is felt that it would most likely be possible to make the lab more rewarding if a more homogeneous baseline programming knowledge could be assumed.

Concerning the experimental lab, the students achieved a good understanding of the thermodynamics involved many (but not all) found a good connection to the course content. Compared to previous installments of the course, teachers, preparatory lecture and lab manual were better received.

Concerning the exercise sessions, these were usually not attended by many people, but the number of participants increased while the course was progressing. However, many people came to the sessions primarily focused to work on the

hand-ins, and less on the exercises, where they would have been receiving much more support. This is an important point, since the exercises have great training relevance for the exam. Incidentally, it was evident that exercises that make use of combinatorics present a hurdle to the students.

Thus, there has been a clear overall improvement in the course, but still many aspects need further consideration. This of course could have to do with the teachers, and how they introduce changes from one installment of the course to the next (this will be discussed below). However, one should also consider if it has to do with the actual structure of this course and the specific time in which it comes in the students' education. It is also important to note that the students in the spring semester and in the fall semester partially differ both in amounts and background/character. In the spring, typically one third to one half of the group of 20 - 25 students are physics teacher students and most of the remaining students are international, exchange students. In the fall, typically there are 50-60 students following the course, with the overwhelming majority Swedish physics students, not in a physics teacher program.

III. Evaluation of changes since last time the course was given

According to the evaluations, there has been a sizeable improvement of the course on several aspects, and this has to do with how the material has been presented, i.e. with changes/shifts of emphasis. We can conclude, from the responses of the students, that this has definitely helped, and that there is room for further improvement along these lines.

IV. Suggested modifications and measures until the next time the course is given

A further reduction of the topics in the course is not entirely easy to perform, without at the same time being at great variance with the syllabus content. As discussed above, emphasis can be further shifted among topics (as already done) and this has produced improvement.

Concerning the book, we are not aware of a book on the market that is at the level of the course and yet does not present the subject in a very expanded/dilute format. A possible solution, as also suggested by some students, would be to typeset the lecture notes. There is now also a process along the way to typewrite the lectures. It should be pointed out that there is an ongoing process to update/rewrite the course in an in-depth way, due to a reorganization of the undergraduate education system at the Physics department. As before, the students asked to have the exercises solutions posted after the sessions, but so far only the answers (i.e. not the full solutions) have been (and will be) made available to them during the course. This strategy is based on experience, since not all students go the exercise sessions, and thus trying one's own solution to the problems becomes less motivating when solutions are available beforehand.

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The course analysis is sent by e-mail to the director of studies: johan.rathsmann@thep.lu.se