

# SK2758 – Solid state physics, 7.5 credits

## Course analysis - Spring 2024, period 4

Course analysis performed by  
Magnus Andersson (examiner)

### Teachers

Magnus Andersson (examiner, course responsible, lecturer)  
Alexander Edström (course responsible, lecturer)  
Mathias Augustin (tutorials)  
Gaolong Cao (X-ray laboratory work)  
Nezhat Pournaghavi (band structure laboratory work, lecturer)

### Studentrepresentant i kursnämnden

Nelly Kleppe

### Course design

The course consists of lectures, tutorials and laboratory work (with two labs – one on X-ray diffraction and the other on band structure calculations). The course is examined through four quizzes in Canvas (TEN3), a normal written exam (TEN2) and a separate examination with written lab reports (LAB1). This year, the lecturing was divided between two lecturers (Magnus Andersson and Alexander Edström) and one lecture related to the laboratory work given by Nezhat Pournaghavi.

### Student workload

The course has 7.5 hp (200 h) during period 4 and the students state that they have spent a reasonable amount of time on the course. This looks normal for the course and since students sometimes underestimate their workload, there are no reasons for change.

### Study results

The course had 40 registered students among which 33 were active in some way during the course and 3 were PhD students. The results on the different parts were as follows:

Ladok code	LAB1	TEN2	TEN3	Full course
Passed (Active)	26 (28)	14 (25)	22 (30)	19 (28)
Percentage	93 %	56 %	73 %	68 %

The grades on TEN2 were distributed as follows:

A: 2 students                      B: 4 students                      C: 5 students  
D: 0 students                      E: 3 students                      F: 10 students

This is not as good as previous years. However, one observation is that students with an E grade all had got an FX grade before. Hence, there was a clear divider between two groups of students in the class, where one group got high grades (A, B or C) and another group of students that either failed the course or got an FX grade, which they complemented to grade E. It is difficult to determine what that apparent difference comes from.

### **Results from course committee meeting and student questionnaire**

6 students out of 33 active students answered the student questionnaire, which was distributed via Canvas after the course. Out of them, two students were quite negative and one of them had also contacted the student representative in the course committee. The following issues were raised during the course committee meeting:

- During the X-ray laboratory, there is some waiting time while the X-ray machine is measuring the X-ray spectra. This time should be used in a better way, for example by instructions or some tasks while waiting.
- Lecture notes had not been published for the band structure lectures. This was a mistake that could easily have been resolved during the course if the students had informed the teachers about it. We could also think about better routines to avoid such mistakes when there are several teachers in the course.
- For some of the exams during covid, the first quiz questions are not available. Not a major problem, since similar questions are available in the digital exams.
- Some figures in the quizzes about phonons would be easier to read if there were additional “help lines” in the figures.
- The time spent on the course is reasonable, although perhaps a little bit low in some cases.
- Clarification in the band structure laboratory that you are not obliged to use MATLAB and can use Python instead if you want.
- The article referred to in the band structure laboratory could not be downloaded due to pay wall. Better to distribute it via the Canvas pages.
- The time for the written exam was a little bit too tight this year.
- A general comment based on the answers from the negative students is that there is some need for increased clarity in the communication about the course.

### **Prioritized course development**

The course will be given the next time in P1 in Autumn 2024 and will at time also include students from the Master’s programme in Nanotechnology. In connection to this, there will be minor adjustments in the course plan and probably also some changes of teachers. Hence, this is a natural opportunity to reconsider how the course is given.