SK2771 Solid State Physics; Period 1; 2019
Evaluation

Compiled by Srinivasan Anand, course responsible

The course consisted of 32 hours of lectures, 20 hours of problem solving sessions and focused on the first eight chapters of Kittel's book on solid state physics.
The course was managed under CANVAS; all contents were regularly updated.

Teachers: Prof. Srinivasan Anand (lectures) ; Dr. Ajith Padyana Ravishankar (tutorials)
Examiner – QUIZ (1 & 2) and final written exam: Prof. Srinivasan Anand

Changes and other relevant information:
The course was conducted in English. All lectures and tutorials were held at the KTH main campus.
SK2771 originally derives from course SK2758 (IM2660) and is now 5 ECTS. Accordingly, the topics were restricted to first 8 chapters of Kittel's book and special lectures (as done previously) on topics such as low dimensional structures, waves in periodic media, emerging materials and magnetism were discontinued. The previously given labs were discontinued. Two the control exams, critical for timely feedback and self-assessment, were retained.
As previously, the scope of the final exam tested all aspects: conceptual (part1), numerical problems and derivations (part2). The grading scheme was retained from previous year.

GRADE	Only final exam (Max 24)	2 quizzes + final exam (MAX 28)
A	>22-24	>24-28
B	>19-22	>20-24
C	>16-19	>16-20
D	>13-16	>13-16
E	12-13	12-13
FX	>10 < 12	>10 < 12

Course content: During the course, relevant concepts and formalism in quantum mechanics were reviewed when necessary. The contents of chapters 1-8 were relatively new for a majority of the students, while some were familiar with some basic concepts and terms on crystal structure.
Course development (Changes from previous year): This year the tutorials were conducted by Dr.A. P. Ravishankar. Efforts were made for tighter coordination between the lecture topics and tutorials. The tutorial problems and solutions posted on Canvas were edited to include new problems and conceptual questions; some of these were adapted from previous exams or quizzes. These efforts are now being consolidated by A. P. Ravishankar to provide a compendium style – guide with conceptual questions and problems (derivations, exercises and numerical calculations) and where relevant to complement with data on material properties from literature to give more examples than available in course book. The ambition is to have the first version available for the next time.
Composition of students: The student pool was from the nanotechnology masters program (majority) and Erasmus exchange students. The average attendance was about 80 % and near full attendance at the control exams/quiz. The student participation was active with discussions during the breaks and after the class.
Special problems/Difficulties: A few students in the nanotechnology program had difficulties due to their previous educational background: lack of familiarity with modern physics, quantum mechanics and mathematics (applied/physics context). Other difficulties experienced (e.g. in the written exams)

include connecting/reflecting on the “obtained” or “expected range” of numerical values of physical quantities with known concepts.

Specific recommendations for 2020:
Continue present course format. Continue coordination of SK2771 and SK2758 (course responsible: Magnus Andersson) in terms of topics, exams and flexibility on attendance.
Make available a compendium style guide with conceptual questions and problems (derivations, exercises and numerical calculations) and add relevant data on material properties from literature to give more examples than available in course book. Use this material actively in the class – both in lectures as pointers and explicitly in tutorials. Make efforts to make students to reflecting on the “obtained” or “expected range” of numerical values of physical quantities with known concepts.