

FYS3410, Spring 2015, final examination

The examination is oral and with external censorship. You will draw a question among those questions given in advance, and you will then have 30 minutes preparation time. The examination itself will take approximately 30 minutes. During the first 15 minutes of the examination you present your answer to the question which you have drawn; in the next about 10-12 minutes you will be asked additional questions related to the content of the course; the rest of the time is for internal discussion of your performance. Altogether your presence is required for approximately 1 hour (please choose an appropriate slot of time from those suggested below).

Note that 15 minutes is not a lot of time for making a presentation - you will have to be selective and you will also be evaluated on how well you have selected relevant materials. You can use any sort of notes during the presentation, for instance to copy a complex equation you need for the evaluation. However, please consider not to excaudate this possibility, since too excessive use of notes may be used against you.

The place for the examination is going to be decided and announced in the nearest future.

FYS3410 examination questions, Spring 2015

Crystal bonding and role of electrostatic interaction.

Interpretation of x-ray diffraction in reciprocal space.

Defects in crystals

Vibrations in periodic lattices – infinite versus finite crystals

Phonon heat capacity – evaluation of different models

Lattice thermal conductivity

Free electron Fermi gas (FEFG) in 3D and its density of states (DOS).

FEFG in quantum wells and quantum wires

FEFG at $T > 0$; electron heat capacity

Origin of the energy band structure

Electron occupancy in the bands, metals and insulators

Effective mass approximation and its application for understanding “hydrogen-like” impurities in semiconductors

Intrinsic and extrinsic carrier generation in semiconductors

p-n junctions

Schedule for the final oral examination in FYS3410, spring 2015

26/3/2015

26/03/2015

09.30-10.00	Daniel Wolseop Lee
10.00-10.30	

11.00-11.30	
11.30-12.00	

10.00-10.30	Richard Asbah
10.30-11.00	

11.30-12.00	
12.00-12.30	

10.30-11.00	Feyu Hordofa
11.00-11.30	

12.00-12.30	Kjetil Almaas
12.30-13.00	

break

13.00-13.30	Jonas Libak
13.30-14.00	

14.30-15.00	
15.00-15.30	

13.30-14.00	
14.00-14.30	

15.00-15.30	
15.30-16.00	

14.40-14.30	
14.30-15.00	

27/03/2015

27/03/2015

09.30-10.00	Simen Bergan
10.00-10.30	

11.00-11.30	Martin Nyborg
11.30-12.00	

10.00-10.30	Seyon Elanchcelian
10.30-11.00	

11.30-12.00	Magnus Moe Nygård
12.00-12.30	

10.30-11.00	Mahnaz Moradian
11.00-11.30	

12.00-12.30	Gassan shabat
12.30-13.00	

break

13.00-13.30	Hans Jakob Mollatt
13.30-14.00	

14.30-15.00	Massimo Giordano
15.00-15.30	

13.30-14.00	Torbjørn Mehl
14.00-14.30	

15.00-15.30	
15.30-16.00	

14.00-14.30	
14.30-15.00	