

MATERIALS PHYSICS II FYSM400 FALL 2007

Prerequisites: FYSA230, FYSA240, FYSM300

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Lectures: Mondays 10-12 YN121 Wednesdays 10-12 YN121

Exercises: Wednesdays 12-14 FL140

Weekly homework exercises need to be returned every Tuesday by noon for grading

Exams: 2 Intermediate exams: Dates decided during the first lecture.

Exams: max $2 \times 30 = 60$ points (pass (1) requires min 10 points from each exam)

Homework: max 40 points (\leftarrow 80% performance)

Course total: 100 points, scale: 1 : 50p, 2 : 60p, 3 : 70p, 4 : 80p, 5 : 90p

Literature:

- *Michael P. Marder: Condensed matter physics, Wiley 2000 (corrected printing)*
- *Stephen Elliott: The physics and chemistry of solids, Wiley 1998*
- Charles Kittel: Introduction to solid state physics, Wiley, 7th, 8th editions
- Neil W. Ashcroft and N. David Mermin: Solid state physics, Holt-Saunders
- P.M. Chaikin and T.C. Lubensky: Principles of condensed matter physics, Cambridge University Press
- J.R. Hook and H.E. Hall: Solid state physics, 2nd edition, Wiley 1991
- Yuri M. Galperin: Introduction to modern solid state physics, *web book*:
<http://folk.uio.no/yurig/fys448/Fys448.html>

Website for Marder book:

<http://chaos.ph.utexas.edu/~cmp>

Contents

Review of the single-electron model

Electron-electron interaction

Band structures

Phonons: classical and quantum mechanical treatment

Electron transport

Optical properties of semiconductors and insulators

Magnetism

Superconductivity

Nanostructures