PHYS 403 – Solid State Physics

Semester: Spring 2006
Instructor: Alper Kiraz
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Office Hours: We, B1 9:30 – 10:45 or by appointment
Lecture Hours: Tu, Th B5 – 15:30 – 16:45
Room: Eng. B15

Course Description: Elementary crystal structure; the reciprocal lattice; lattice dynamics and phonons; thermal properties of materials; electron gas; Fermi- Dirac statistics and the Fermi surface; band theory, semiconductor physics and properties, semiconductor devices.

Textbook: Introduction to Solid State Physics, Seventh Edition, Charles Kittel, 1996 Wiley. ISBN: 0-471-11181-3

Grading:
1st Midterm 25%, (in class)
2nd Midterm or Project 25%, (in class)
Homework 20%
Final 25% (to be announced)

Attendance Policy: If a student attends 90%-100% of the classes s/he obtains 5%, if a student attends 70%-90% of the classes s/he obtains 3%, if a student attends 50%-70% of the classes s/he obtains of 1%.

Homework Policy: You may discuss the problems, consult your teachers and use the library and internet. However, the final submitted work should be totally yours. You must not submit work done in groups, transfer files or copy from a book.

Lecture Schedule:

Week		**Subject**
1	Feb. 14	Crystal Structure
2	Feb. 21	Crystal Structure
3	Feb. 28	Reciprocal Lattice
4	Mar. 7	X-Ray Scattering – Crystal Binding
5	Mar. 14	Lattice Vibrations (Classical)
6	Mar. 21	Lattice Vibations (Quantum)
7	Mar. 28	Free Electron Theory
8	Apr. 4	SPRING BREAK
9	Apr. 11	Electron Energy Band Theory
10	Apr. 18	Semiconductors
11	Apr. 25	Semiconductors
12	May. 2	Semiconductor Devices
13	May. 9	Fermi Surfaces
14	May. 16	Fermi Surfaces
15	May. 23	Plasmons, Polaritons, Polarons