PHYS 403 – Solid State Physics

Semester: Spring 2007
Instructor: Alper Kiraz
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Office Hours: Tu B1 9:30 – 10:45 or by appointment
Lecture Hours: Tu, Th B5 – 15:30 – 16:45
Room: Eng. B21

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 20 %, (to be announced)
2nd Midterm 20 %, (to be announced)
Homework 10 %
13 Quizzes 19.5% (1.5% per quiz)
Final 25% (to be announced)

Attendance Policy: If a student attends 90%-100% of the classes s/he obtains 5.5%, 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 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. 05	Crystal Structure (Chapter 1)
2	Feb. 12	Crystal Structure (Chapter 1)
3	Feb. 19	Reciprocal Lattice (Chapter 2)
4	Feb. 26	Reciprocal Lattice (Chapter 2)
5	Mar. 05	Crystal Binding (Chapter 3)
6	Mar. 12	Crystal Vibrations (Chapter 4)
7	Mar. 19	Crystal Vibrations / Thermal Properties (Chapters 4 & 5)
8	Mar. 26	Thermal Properties (Chapter 5)
9	Apr. 02	SPRING BREAK
10	Apr. 09	Free Electron Theory (Chapter 6)
11	Apr. 16	Electron Energy Band Theory (Chapter 7)
12	Apr. 23	Electron Energy Band Theory (Chapter 7)
13	Apr. 30	Semiconductors (Chapter 8)
14	May. 07	Semiconductors (Chapter 8)
15	May. 13	Semiconductor Devices