

HUNTER COLLEGE OF CUNY

Department of Physics

Fall 2016

Solid State Physics: Physics 445

Lecturer: Professor Godfrey Gumbs

Office: 1247N;

Phone #: 650-3935

E-mail: ggumbs@hunter.cuny.edu

Web page: <http://www.hunter.cuny.edu/physics/faculty/gumbs/home>

Text: The course will follow Charles Kittel ,

Introduction to Solid State Physics

(Eighth Edition, Wiley)

Lectures: Tuesdays & Fridays: 9:10-11:00,

College rule Re. academic dishonesty: Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The college is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

NOTE:

- First class: Friday August 26.
- No classes: Tuesday October 11.
- No classes: Friday November 25.
- Reading Day: Tuesday December 13.
- Last class for Fall 2016: Tuesday December 13.

First Mid-Term : Tuesday October 4, 2016 in 1311HN

Second Mid-Term : Tuesday November 11, 2016 in 1311HN

End-Term Exam (*Cumulative*): Time and date to be announced (after December 14).

Problem Sets: These assignments will be posted every two weeks. Most problems will be taken from the exercises at the end of the chapters. You must try to solve them to gain experience solving problems which cover the lecture material. But, I will post the solutions on-line a week or so after they first appear so that you could compare your answers with mine.

Tentative Outline

The first nine chapters of the text. These will include

1. Geometry of Solids.
2. Electrons in Solids.
3. Electrons in a Periodic Potential: Nearly Free Electron Model.
4. Reciprocal Lattice, Brillouin Zone, Waves in Crystals.
5. Insulator, Semiconductor, or Metal.
6. Specific Heat of Solids: Boltzmann, Einstein, and Debye.
7. Electrons in Metals: Drude Theory.
8. Energy Bands in One Dimension.
9. Toy Models of Solids in One Dimension.

There will be a total of about twenty-seven lectures.

Grades Computed as Follows

First Midterm:	25%
Second Midterm:	25%
Final Exam:	50%
TOTAL	100%