

Spring 2017 PHY 375 S
INTRODUCTORY SOLID STATE PHYSICS
Unique number: **56960**

Meets: MWF 9:00a in RLM 5.120
Instructor: Prof. Alex de Lozanne
Office: RLM 13.204
Office Hours: Wed 12:30-2:30 pm (or make appointment via email: delozanne@physics.utexas.edu)
Grader: TBA Office Hours: TBA

COURSE REQUIREMENTS:

Homework	15% of grade
Three midterms	20%/ea
Final Exam	25%

MIDTERMS: In class, Fridays, February 10, March 10, April 7

FINAL: Thursday, May 11, 2:00-5:00 pm

You can bring one book to any exam, no notes.

HOMEWORK IS DUE AT THE BEGINNING OF CLASS.

Course Prerequisites: Undergraduate statistical mechanics and quantum mechanics (PHY 369 and PHY 373). Equivalent basic knowledge of thermal physics and quantum mechanics may be substituted.

Administrative Issues: Kelly McCoy, ugaffairs@physics.utexas.edu, Undergraduate Office, RLM 5.216, 471-8856

Special Accommodations: The University provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY.

COURSE CONTENTS: (Following the text)

- Chapter 1 Crystal Structure
" 2 Wave diffraction and the reciprocal lattice
" 3 Crystal binding and elastic constants
" 4 Phonons I : Crystal vibrations
" 5 Phonons II : Thermal Properties
" 6 Free electron Fermi gas
" 7 Energy Bands
" 8 Semiconductor crystals
" 9 Fermi surfaces and metals

Time permitting we will cover (in any order, depending on student interest):

Ch 10-15 Superconductivity, Magnetism, Plasmonics

TEXT: Introduction to Solid State Physics by Charles Kittel, 7-th edition (QC 176 K5 1996). Other editions can be used.

OTHER BOOKS: On reserve at PMA library (ask for deLozanne's class at the front desk).

Solid State Physics, by Harald Ibach & Hans Lüth , Third or Fourth Ed.
QC176.I2313 2009 PMA (ISBN: 354043870X / 3-540-43870-X)

Elementary Solid State Physics: Principles and Applications, by M. Ali Omar / Reading,
Mass. / 1975
QC 176 O38 1975 Physics-Math-Astronomy Library

Introductory Solid State Physics by H.P. Myers QC 176 M94 1990 Physics-Math-
Astronomy Lib Reserves

Solid State Physics by Ashcroft and Mermin. (QC 176 A83) (ADVANCED)

Condensed Matter Physics by Michael Marder
QC 173.454 M37 2000 Physics-Math-Astronomy Lib Reserves (ADVANCED)

Introduction to Solid State Physics by Charles Kittel, 8-th edition (QC 176 K5 2005).