

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](mailto: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](mailto: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.  
QC176I2313 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).