PHZ 5405: Solid State Physics I

Instructor: Dr. Inna Ponomareva; Office: ISA 5103; E-mail: iponomar@usf.edu; telephone: 974-7286

Text: The Physics of Solids: Essentials and Beyond

Publisher: Springer; Author: Eleftherios N. Economou

The electronic version of the book is free for USF students. The link is

http://link.springer.com/book/10.1007%2F978-3-642-02069-8

Softcover Edition of the title is $24.99. The purchase is requested directly from the "Buy Now" box located on the home page of the online title.

Class: MW 12:30pm-1:45pm ISA 4010

Office Hours: MW 2:00pm-3:00pm and by appointment.

Course Outline and Objectives

The course provides introduction to Solid State Physics. It requires understanding of fundamental concepts from quantum mechanics, electromagnetism, and statistical physics. The topics of the course include different types of solids, crystal structure, ionic vibrations, semiconductors, band structure and density of states, magnetism, superconductivity, and others. The main ideas are understood and re-enforced by developing conceptual problem-solving skills. Problems will be assigned from each part of the text. After we complete each part in the text, I will ask for two of the assigned problems from that part to be handed in. These problems will be due at the beginning of the first lecture of the next part. In addition, there will be a quiz after each part that emphasizes basic concepts of the material learned. I will give exact dates for these quizzes about one week in advance. In studying for the quizzes and examinations you are encouraged to work on problems in the book in addition to those assigned. Please read the text before each lecture. Although I will not require attendance, it is paramount that you come to every lecture in order to keep up with the work. Please come see me during office hours if you have missed a lecture to get 'up to speed' on the course work.

Course Grading Breakout		
	Assigned Problems	20 %
	Quizzes	20 %
	Mid-term Exam	30 %
	Final	30 %

Course Grading

> 93		A
90	< 93	A-
87	< 90	B+
84	< 87	B
80	< 84	B-
77	< 80	C+
74	< 77	C
70	< 74	C-
67	< 70	D+
64	< 67	D
60	< 64	D-
	< 60	F

Tentative Schedule and Examination Dates

Week Beginning	Topics (Chapters in Text)
Jan 10	Part I: An Overview (1-3)
Jan 17	
Jan 24	
Jan 31	Part II: Two simple models for solids (4-7)
Feb 7	
Feb 14	
Feb 21	Mid-term on Parts I & II +Part II quiz on Monday, February 22nd Part III: More about periodicity & its consequences (9-12)
Feb 28	
Mar 6	
Mar 13	Spring break
Mar 20	Parts IV-V: Materials and defects overview (13-19)
Mar 27	
Apr 3	
Apr 10	Part VI: Correlated systems (20-23)
Apr 17	
Apr 24	
May 1	FINAL on Parts III-VI + Part VI quiz on Wednesday, May 4th 10:00 AM – 12:00 PM

NOTE

Students who anticipate being absent from exams due to a major religious observance must provide notice of the date(s) and event(s) to the instructor, in writing, by the second class meeting. Notes and Tapes are not permitted for purposes of sale.
Any student with a disability is encouraged to meet with me privately during the first week of class to discuss accommodations. Each student must bring a current Memorandum of Accommodations from the Office of Student Disability Services (974-4309, SVC1133) which is prerequisite for receiving accommodations. Accommodated examinations through the Office of Student Disability Services require at least two weeks notice.