

**PHZ 4404 Introduction to Solid State Physics [Spring 2023] (3 credits)  
Face-to-Face (F2F) in NPB 1216: Class (Section) Identifier: 16127 (1H47)**

Tentative Syllabus (version of 06 January 2023)

<http://www.phys.ufl.edu/~meisel/PHZ4404-Spring-2023.html>

**Subject and Focus of the Course (I):** This course is designed for seniors and beginning graduate students in physics and physics related sciences and engineering. The subjects to be covered were developed mostly during the 20th century in the fields of solid state/condensed matter physics. For the most part, the material is presented at an introductory level, but a few “deep dives” may also be presented.

**Inclusion, Diversity, and Equity:** My intention is to provide each student with a safe, diverse, and inclusive atmosphere that affords a personalized opportunity to engage the material being presented. I will attempt to present the course material and graded assignments in a manner sympathetic to the unique conditions that each individual may be experiencing, while also being respectful of diversity of gender, sexuality, ethnicity, race, culture, socioeconomic status, age, and accommodations. To achieve this environment, I ask for suggestions and feedback from all students, as each perspective is important to me, and I will do my best to make adjustments that are needed.

**Instructor:** Mark W. Meisel (*he/him*), Department of Physics, University of Florida

**Office:** NPB 2358, Tel: 392-8867; **Lab:** NPB B133, Tel: 392-9147; **Email:** [meisel@ufl.edu](mailto:meisel@ufl.edu)

**Office Hours:** posted online, <http://www.phys.ufl.edu/~meisel/schedule.htm>, and by appointment.

**Note:** Meetings in my office require appropriate facing coverings.

**Email Correspondence with Instructor:** The Instructor will attempt to respond, within nominally 24 hours of regular business days, to email within the UF e-Learning system (ELS Canvas system) or from UF email accounts if the message contains the name of the student **AND the subject line starts with PHZ4404**. *Email will not be sent to email addresses outside the UF-domain (ufl.edu).*

**Prerequisite/Corequisite:** *Prerequisite* - PHY 4604 Intro Quantum Mech 1. *Corequisite* - PHY 4523 Statistical Physics. *If you do not meet these requisites, then you will need permission of the Instructor to follow this course and you must consult with the Instructor before 13 Jan 2023, which is the deadline for the drop/add period for this semester.*

**General Education:** This course is not part of the “Physical Science” General Education Requirement.

**Textbook (required):** *The Oxford Solid State Basics* (Oxford University Press, 2013) by [Steven H. Simon](#). NOTE: the author (who is a theorist) has made a [series of lectures-podcasts](#) publicly available\*, thereby allowing the student to contrast this course (taught by an experimentalist). \*Licence Creative Commons Attribution-Non-Commercial-Share Alike 2.0 UK: England & Wales; <http://creativecommons.org/licenses/by-nc-sa/2.0/uk/>

**Meeting Times and Method:** Mondays, Wednesdays, and Fridays: 4th period (10:40 am – 11:30 am) (10:40 hrs to 11:30 hrs) for in-person lectures. Lectures will not be recorded.

**Posting:** Materials and information concerning the course, including important dates and an “*in vivo*” schedule, will be posted on the Course Webpage within the UF ELS Canvas system.

**Attendance:** **Students are expected to attend lectures** since material outside the textbook will be presented. Unless otherwise stated, all materials covered in the text and in class are relevant for any graded exercise. The established [UF Attendance Polies](#) will be followed.

**UF policy for “In-Class Recording”:** “Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.”

**Subject and Focus of the Course (II):** This course is designed for seniors and beginning graduate students in physics and physics related sciences and engineering. The subjects to be covered were developed mostly during the 20th century in the fields of solid state/condensed matter physics. For the most part, the material is presented at an introductory level, but a few “deep dives” may also be presented.

Theoretical aspects will be presented along with the experimental methods that allow the phenomena to be probed. In addition, students will be required to use numerical tools (*i.e.* computer-based computational methods and programs) to make suitable plots about some aspects of their work. Suitable plots include appropriately labelled graphs that include appropriate units, if appropriate. These plots will also require a typed caption that provides a brief description and interpretation, when appropriate. If you are not certain about the requirements for full credit, please ask well in advance of the deadline for submitting the graded exercise. All of these aspects of the course is an attempt to give the material a deeper meaning.

### **Graded Material and Grading Policy:**

**Homework:** Homework problems will be assigned on a regular base. Students are expected to work on the problems and submit their work individually. Discussion with your colleagues are encouraged but should not be used as a shortcut to completing the assignments. Work must be complete, concise, and clear for full credit. **Assignments submitted late will not be graded.** The homework are graded on a point system, which will be converted to a percentage that will result in a letter grade which provides grade points.

**Oral Exam:** No written exams will be given. There will be one oral exam (about 30 min) near the end of the semester. Each student will be asked several questions to be answered verbally and/or on the blackboard or electronic tablet. The questions will mainly focus on the topics covered in class, in homework assignments, and in the student’s term paper. This exam will be awarded a letter grade which will converted to grade points.

**Term Paper:** Students will choose one topic out of the suggested topics in consultation with the instructor and write a comprehensive research-style paper. All papers should be submitted electronically in PDF and will be checked by Turnitin. Students are encouraged to use LaTeX to generate PDF files but MS Word is also acceptable. The topics and detailed structure of the paper will be announced in class. Grammar and logical organization will be elements of the grade. This term paper will be graded by the letter grade system which will be converted to grade points.

**Seminars/Colloquia:** Students will get credit for attending Condensed Matter – Biological Physics Seminars (Mondays 4:05 pm, see <https://www.phys.ufl.edu/cmseminar/>), Condensed Matter Physics related Colloquia (Thursdays 3:00 pm, see <https://www.phys.ufl.edu/colloquium/index.html>), and/or other (chemistry, materials science, or similar) seminars or colloquia that are not part of a grade for another course. Each student will submit a “one-pager” (template to be provided), which is nominally a 300 word summary of the talk with the students own questions and critique about the talk. These reports are graded on a point system, which will be converted to a percentage that generated the letter grade that results in grade points. Three of these reports are required for this course.

**More about Homework and In-Class (IC) Exercises:** Homework problems and In-Class (IC) Exercises will be assigned on a regular basis. Students are expected to work on the problems and submit their work individually unless otherwise stated. Work must be complete, concise, and clear for full credit. Each assignment will have a specified due date and time. Unless otherwise stated, all assignments submitted via the online Canvas course page are to be typed. **Assignments submitted late will not be graded.**

**Final Exam:** The Final Exam window for this course is **Final Exam (Group D): Tuesday, 02 May 2023, 3:00 pm – 5:00 pm (15:00 hrs to 17:00 hrs)**. All Spring 20232 course activities must be completed by 5:00 pm (17:00 hrs) on Friday, 05 May 2023.

Additional details about the UF grading policies can be found at found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

#### Summary

In-Class Exercises	15%
Homework	25%
Term Paper	20%
Seminars/Colloquia reports	15%
Oral Exam	25%
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Total	100%
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#### Final Course Grade Scale

A	85% - 100%
A-	80% - 84.9%
B+	75% - 79.9%
B	70% - 74.9%
B-	65% - 69.9%
C+	60% - 64.9%
C	55% - 59.9%
C-	50% - 54.9%
D+	45% - 49.9%
D	40% - 44.9%
D-	35% - 39.9%
E	0% - 34.9%

**Make-Up of Graded Material:** Consistent with university policies described elsewhere ([here](#)), students will be allowed to make-up graded material. In most circumstances, the reason for the make-up will need to be documented by a note typically from a medical doctor, an attorney, or a UF official. Notes from family members are not acceptable. When possible, the student should inform the Instructor in advance of absences or delays in completing graded assignments.

**Academic Honesty:** Each student is expected to generate graded work by an individual and original effort and (e.g. usually a zero grade is given on the assignment). Please review the University Policies on Academic Honesty, and links are <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/> and <http://www.dso.ufl.edu/sccr/>. **Note that the process is one that involves the faculty member and the students:**

*“Academic honesty and integrity are fundamental values of the University. Students commit to holding themselves and their peers to the high standard of honor required by the Student Honor Code. Any Student who becomes aware of a violation of the Student Honor Code is encouraged to report the violation to the appropriate University Official.”*

**Accommodations and Advising:** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the Instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

**Advising and Counseling:** Due to the nature of the environment at the university, it is not uncommon for students to experience stressful situations, and “study harder” sometimes does not seem to work. If you find yourself in this situation, you are encouraged to seek confidential counseling, see: <http://www.counseling.ufl.edu/cwc/>.

**Incomplete Policy:** A grade of incomplete is typically given to students who endure a situation in which they are incapable of completing the coursework. The I-grade is not to be given to students who are simply dissatisfied with their performance in the course. If you find you are in a situation that might qualify you for an I-grade and you want to pursue this potential option, then you must contact the Instructor as soon as possible. A PDF of the policy is posted at: <http://www.phys.ufl.edu/downloads/grade policy.pdf>.

**Final Exam and Special Notes about the Syllabus:** Please note that the dates for all graded materials, except the Final Exam, are TENTATIVE. The schedule will be finalized during the course and will be announced in class and posted to the “*in vivo*” schedule and updated on the course UF ELS Canvas page.

**Final Exam:** The Final Exam window for this course is **Final Exam (Group D): Tuesday, 02 May 2023, 3:00 pm – 5:00 pm (15:00 hrs to 17:00 hrs)**. All Spring 20232 course activities must be completed by 5:00 pm (17:00 hrs) on Friday, 05 May 2023.

**Comments on Knowing Your Grades:** It is expected that graded material will be returned to each student in a timely fashion, usually at the start of the first-class period after which it was submitted. In most instances, the material and rubric will be reviewed during a lecture. After the review, if a student has any question about the grading of the work, please arrange for a timely meeting (typically within a week of grades being posted) with the Instructor to review the grading. Students should keep records of the materials submitted as graded exercises. The UF ELS Canvas site is used to electronically post the grades, <http://elearning.ufl.edu/>. If you have any questions about your points on any material or for the course, please contact the Instructor.

**General Classroom Behavior:** Please avoid having distracting audio or visual events occur during class. Use of electronics in the classroom, if used, are to be related to the course material only. **Suggestion:** Be careful of using non-UF based “chat” methods as behavior on any non-UF based platforms because they may be considered outside the extent of the UF Honor Code.

**Course Evaluations:** Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluer.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

**Subject and Focus of the Course (III):** When asked, share your voice about the material to be covered and the extent/depth that is of interest to you. Indeed, your interests should drive the potential topic for your term paper (as long as your work is not also be submitted as graded work for another class).