

**PHYSICS 714
LOW TEMPERATURE PHYSICS**

- INSTRUCTOR:** Barbara Neuhauser TH 540 (academic office)
415-338-1468 TH 106 (research office)
barbjn@sfsu.edu
- E-MAIL CONTACT:** You mail e-mail me about administrative matters. Please do NOT e-mail questions about homework. I have to draw diagrams and wave my hands when I answer physics questions. Please use this subject in your e-mail messages: "PHYSICS 714: your name"
- OFFICE HOURS:** MWF 1:30 pm - 3:00 pm in TH 540 (tentative)
Tuesday Noon - 2:00 pm in TH 106 (tentative)
and by appointment
- PREREQUISITES:** PHYSICS 320 (Modern Physics I)
PHYSICS 370 (Thermodynamics and Statistical Mechanics)
PHYSICS 450 (Solid State Physics)
- REQUIRED TEXTS:** **Principles of Superconductive Devices and Circuits** (2nd edition)
by T. Van Duzer and C.S. Turner (Prentice Hall PTR)
- Matter at Low Temperatures**
by P.V.E. McClintock, D.J. Meredith, and J.K. Wigmore
(out of print; copies will be provided)
- CONTENT:** Students are expected to master basic concepts in the following areas and to be able to apply them to solve qualitative and quantitative problems.
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- Low temperature properties of crystal lattices
 - Low temperature properties of normal electron systems
 - Superconductivity (theory and applications)
 - Superfluid helium-4
 - Liquid helium-3 (Fermi liquid and superfluid)
 - Experimental techniques
- LECTURES:** **Students are expected to attend ALL lectures and to ARRIVE ON TIME for the lectures. Please TURN OFF your cell phone during lectures.**
- A tentative lecture schedule will be provided during the first week of classes. Lectures will discuss relevant portions of the textbooks and provide extensive supplemental materials. Lecture notes will be handed out frequently so that students can focus on the presentation. Relevant questions that can be answered briefly are welcomed during the lectures. Longer discussions of topics must be deferred to scheduled office hours.
- HOMEWORK:** Approximately ten problem sets will be handed out during the semester. Students are expected to state briefly but clearly the justification for each major step in the solution to a problem. Sloppy homework sets may not be graded.

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NOTE that the collection of problems sets constitutes 75% of the course grade! The problem sets should be regarded as installments of an extended midterm exam. Thus students are allowed to discuss with each other only the most general approaches to the problems. Most questions should be directed to the instructor. Each student must work out the detailed solutions by him/herself without using solutions obtained from any source. If a clear pattern of unauthorized “cooperation” on problem sets emerges, then very challenging in-class mid term exams will be introduced, and the grading will be rigorous.

FAILURE TO HAND IN THE FIRST PROBLEM SET ON TIME WILL RESULT IN THE STUDENT BEING DROPPED FROM THE COURSE. Failure to hand in the remaining problem sets on time may result in a 25% penalty.

EXAMINATIONS:

MIDTERM: Tentatively there will NO midterm exam(s). As noted above, the problem sets assigned during the semester should be treated as installments of an extended midterm exam. If unauthorized collaboration on problem sets occurs, then in-class midterm exams will be introduced and a revised grading scheme will be used.

FINAL EXAM: Tuesday, 20 December 2016, 8:00 am – 10:30 am

The final exam will be taken in-class, closed book and closed notes.

The final exam MUST be taken at the scheduled time to avoid assignment of a grade of zero. Do not make travel plans that conflict with this schedule. No make-up final exam will be given except in the case of illness or personal crisis.

GRADE: A student must earn at least 60% of the total possible points in order to receive a grade of B - or better.

HOMEWORK: 75 % (Subject to revision if midterm exam(s) are introduced.)

FINAL EXAM: 25 % (Subject to revision if midterm exam(s) are introduced.)

CHEATING ON HOMEWORK OR EXAMS WILL RESULT IN FORMAL DISCIPLINARY ACTION BEING TAKEN AGAINST THE STUDENT.

PHYSICS AND ASTRONOMY DEPT. WITHDRAWAL POLICY: <http://www.physics.sfsu.edu/policy/withdrawal.pdf>

STUDENTS WITH DISABILITIES:

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email (dprc@sfsu.edu).

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STUDENT SURVEY FORM

Please fill out this form and hand it in at the end of the class period. Your completed form will serve as proof of your attendance.

Name: _____
(family) (given)

Major: _____

Address: _____

Telephone: _____ e-mail: _____

Summary of undergraduate and graduate Physics and Engineering courses already taken:

Course	Date Completed	Grade (optional)
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Comments or questions: _____

