

Condensed Matter Physics II(2.0 credits)

Code	: 10235
Course Type	: Specialized Courses
Class Format	: Lecture
Course Name	: Fundamental and Applied Physics
Starts 1	: 3 Spring Semester
Elective/Compulsory	: Compulsory
Lecturer	: Bernard GELLOZ Designated Associate Professor

•Course Purpose

The goal of this course is to learn about the fundamental theories related to the behavior of electrons and atoms in solids and about the mechanism of some of the most important properties solids exhibits, including electrical, thermal, and mechanical properties.

•Prerequisite Subjects

There are no prerequisites

•Course Topics

1. Lattice vibrations; Phonons
2. Heat capacity of solids - Classical theory
3. Heat capacity of solids - Einstein model and Debye model
4. Thermal conductivity of solids
5. Introduction to electron theory of metals; Drude model
6. Free electron model: quantum approach; Fermi sphere
7. Concept of energy bands
8. Fermi-Dirac distribution function
9. Electronic specific heat
10. Semiconductors
11. Dielectric properties of solids

It is desirable to read a textbook or reference materials before a class

•Textbook

Introduction to Solid State Physics (IE), 8th Edition Kittel, Charles/ McEuen, Paul John Wiley & Sons Inc. 2005(¥ 12,015)

•Additional Reading

Ashcroft&Mermin: Solid State Physics (Brooks/Cole) Price: ~\$60

P. Hofmann: Solid State Physics, an introduction (Wiley-VCH) Price: ~\$40

•Grade Assessment

Grades will be based on homework, a midterm examination and a final examination.

•Notes

There are no prerequisites

•Contacting Faculty

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