UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Solid State Physics

2223-1-F1701Q097

Aims

Introduction of fundamental concepts in Solid State Physics

Contents

Structural, electronic and vibrational properties of solids

Detailed program

1. Drude-Sommerfeld theory of metals,
2. Crystal lattices and reciprocal lattices,
3. X-Ray diffraction,
4. band structure in solids,
5. Semiclassical electron dynamics,
6. Classical harmonic crystal,
7. quantum harmonic crystal,
8. Measuring phonons,
9. Heterostructures, quantum nanostructures

Prerequisites

Classical mechanics and electromagnetism, basic quantum mechanics

Teaching form

Frontal lectures and exercise sessions using blackboard and/or slides.

Textbook and teaching resource

Books

- N.W. Ashcroft and N.D. Mermin, “Solid State Physics”
- Harald Ibach & Hans Lüth, "Solid-State Physics: An Introduction to Principles of Materials Science"

Copies of the slides used during lectures

Semester

Ist Semester

Assessment method

Students’ knowledge will be evaluated through an oral exam focusing on the topics discussed during the course.

Office hours

at the end of the lessons or by appointment

Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE