



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Solid State Physics

2122-1-F1701Q097

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#### 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**

Asynchronous lessons recorded by the teacher. Every two week a web meeting with students for Q&A.

### **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**

oral examination

### **Office hours**

at the end of the lessons or by appointment

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