

# UE Solid state physics II



Level  
Baccalaureate  
+4



ECTS  
3 credits



Component  
UFR PhITEM  
(physique,  
ingénierie, terre,  
environnement,  
mécanique)



Semester  
Printemps

- > **Teaching language(s):** English
- > **Open to exchange students:** Yes
- > **Code d'export Apogée:** PAX8NQAA

## Presentation

### Description

*Goal:* This solid-state physics class is the follow up of Solid-State Physics I. It goes one step further in the description of solid properties, including light-matter interactions (polarons, polaritons), effects of magnetic field (Landau levels, Fermi surfaces) and new states of matter (introduction to superconductivity and magnetic order).

*Content:*

- Review of electronic band structures.
- Effects of interactions: plasmons, polarons and polaritons.
- Effects of magnetic field: Landau levels, probe of Fermi surfaces, quantum Hall effect.
- New states of matter : superconductivity, magnetic phases, spin Hamiltonians, magnons.

*Bibliography:*

Introduction to solid state physics, 8th edition, Charles Kittel  
Solid state physics, Neil Ashcroft and David Mermin

### Course parts

UE Solid state physics II - CM

Lectures (CM)

24h

**Period** : Semester 8

# Useful info

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## Campus

- › Grenoble - Saint-Martin d'Hères
- › Grenoble - University campus