

# UE Solid state physics II



Niveau d'étude  
Bac +4



ECTS  
3 crédits



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

- > **Langue(s) d'enseignement:** Anglais
- > **Ouvert aux étudiants en échange:** Oui
- > **Code d'export Apogée:** PAX8NQAA

## Présentation

### 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

### Heures d'enseignement

UE Solid state physics II - CM/TD

Cours magistral - Travaux dirigés

24h

Période : Semestre 8

# Infos pratiques

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## Campus

› Grenoble - Domaine universitaire