

# Bachelor in Physics

At ULB, an emphasis is put on understanding the scientific method and students are well prepared for careers in both pure and applied research. Teaching follows the most recent research results.

During the three first years (BA), students receive the necessary basic education in mathematics (32%), physics (51%) and chemistry (6%). This is complemented by English (3%), computer science (5%) and some optional subjects (3%), aiming to either broaden the students' scientific culture or to increase their knowledge of English. An ability to take initiative is very important and will be exercised both when it comes to your individual work or to placement within a research team in the physics department, per your choice.

The various topics covered are:

- > Classical and 20<sup>th</sup> century physics
- > Quantum mechanics
- > Statistical and non-linear physics
- > Astronomy and astrophysics
- > Fundamental interactions and materials physics

## Bloc 1 | BA-PHYS

















### Cours obligatoires

CHIM-F101	<b>Chimie générale</b>   Thierry VISART DE BOCARME (Coordinator), François RENIERS and Laurence RONGY 10 credits [lecture: 72h, tutorial classes: 36h, practical work: 12h, project: 24h]  first and second terms  French
MATH-F101	<b>Calcul différentiel et intégral I</b>   Bruno PREMOSELLI (Coordinator) and Mélanie BERTELSON 15 credits [lecture: 90h, tutorial classes: 90h]  first and second terms  French
MATH-F121	<b>Géométrie analytique et calcul matriciel</b>   Paolo SARACCO (Coordinator) and Michele D'ADDERIO 5 credits [lecture: 24h, tutorial classes: 24h]  first term  French
MATH-F122	<b>Algèbre linéaire</b>   Joost VERCRUYSE (Coordinator), Samuel FIORINI and Anna Vanden Wyngaerd 10 credits [lecture: 54h, tutorial classes: 54h]  first and second terms  French
PHYS-F110	<b>Physique générale I et II</b>   Pascal VANLAER (Coordinator), Michele SFERRAZZA and Sophie VAN ECK 20 credits [lecture: 96h, tutorial classes: 102h, practical work: 42h]  first and second terms  French

# Bachelor in Physics

## Bloc 2 | BA-PHYS

### Cours obligatoires

- INFO-F207 **Informatique** | Sébastien CLESSE (Coordinator)  
5 credits [lecture: 24h, tutorial classes: 24h]  first term  French
- LANG-F201 **Anglais scientifique I** | Alexander CORNFORD (Coordinator)  
5 credits [tutorial classes: 48h]  second term  English
- MATH-F201 **Calcul différentiel et intégral II** | Antoine GLORIA (Coordinator) and Marcelo Ribeiro De Resende Alves  
10 credits [lecture: 60h, tutorial classes: 60h]  first and second terms  French
- MATH-F204 **Mécanique analytique** | Frank FERRARI (Coordinator) and Glenn BARNICH  
10 credits [lecture: 60h, tutorial classes: 60h]  first and second terms  French
- PHYS-F201 **Thermodynamique** | Nicolas CHAMEL (Coordinator)  
5 credits [lecture: 36h, tutorial classes: 24h]  second term  French
- PHYS-F202 **Relativité, électromagnétisme et optique ondulatoire** | Petr TINIAKOV (Coordinator)  
10 credits [lecture: 72h, tutorial classes: 48h]  first and second terms  French
- PHYS-F203 **Introduction à la mécanique quantique** | Serge MASSAR (Coordinator)  
5 credits [lecture: 30h, tutorial classes: 30h]  second term  French
- PHYS-F210 **Laboratoires, statistique appliquée à la physique expérimentale et projet** | Ioana Codrina MARIS (Coordinator), Juan Antonio AGUILAR SANCHEZ, Stéphane CLEMMEN and Sébastien CLESSE  
10 credits [lecture: 24h, tutorial classes: 24h, practical work: 72h, project: 72h]  first and second terms  French

# Bachelor in Physics

## Bloc 3 | BA-PHYS

### Cours obligatoires

- MATH-F314 **Mathématiques pour la physique** | Riccardo ARGURIO (Coordinator), Denis BONHEURE, Clément Cerovecki and Bernard KNAEPEN  
 ⌚ 10 credits [lecture: 66h, tutorial classes: 54h] 📅 first term 🗨️ French
- PHYS-F302 **Mécanique quantique** | Frank FERRARI (Coordinator) and Sébastien CLESSE  
 ⌚ 10 credits [lecture: 66h, tutorial classes: 54h] 📅 first and second terms 🗨️ French
- PHYS-F303 **Physique statistique** | Pierre GASPARD (Coordinator) and Bortolo Matteo MOGNETTI  
 ⌚ 10 credits [lecture: 60h, tutorial classes: 60h] 📅 first and second terms 🗨️ French
- PHYS-F304 **Spectrophysique et Astrophysique** | Sophie VAN ECK (Coordinator) and Pierre-François COHEUR  
 ⌚ 5 credits [lecture: 44h, tutorial classes: 16h] 📅 second term 🗨️ French
- PHYS-F305 **Physique des particules et Physique Nucleaire** | Laurent FAVART (Coordinator) and Michele SFERRAZZA  
 ⌚ 5 credits [lecture: 42h, tutorial classes: 18h] 📅 first and second terms 🗨️ French
- PHYS-F308 **Soft Matter and Solid State Physics** | Patricia Maria LOSADA PEREZ (Coordinator) and Simone NAPOLITANO  
 ⌚ 5 credits [lecture: 40h, tutorial classes: 20h] 📅 first and second terms 🗨️ English
- PHYS-F311 **Laboratoires et Stage de recherche** | Simone NAPOLITANO (Coordinator), Juan Antonio AGUILAR SANCHEZ, Barbara CLERBAUX, Gilles DE LENTDECKER, Patricia Maria LOSADA PEREZ, Ioana Codrina MARIS and Simona TOSCANO  
 ⌚ 10 credits [practical work: 72h, field trips: 24h] 📅 second term 🗨️ French

### Cours optionnels

*One course chosen from the following*

- BIOL-F102 (optional) **Biologie générale** | Patrick MARDULYN (Coordinator) and Etienne MEYLAN  
 ⌚ 5 credits [lecture: 48h] 📅 second term 🗨️ French
- ENVI-F1001 (optional) **Sciences de la Terre, Environnement et Société** | Pierre REGNIER (Coordinator), Jean-Michel DECROLY and Frank PATTYN  
 ⌚ 5 credits [lecture: 48h] 📅 first and second terms 🗨️ French
- ETHI-F201 (optional) **Sciences, éthique, histoire et société** | Grégoire Wallenborn (Coordinator) and Eric MURAILLE  
 ⌚ 5 credits [lecture: 48h] 📅 second term 🗨️ French
- ETHI-F301 (optional) **Science et Société : analyse de controverses scientifiques** | Patrick MARDULYN (Coordinator) and Grégoire Wallenborn  
 ⌚ 5 credits [lecture: 24h, project: 70h] 📅 first term 🗨️ French
- LANG-F301 (optional) **Anglais scientifique II** | Hugh MURPHY (Coordinator) and Alexander CORNFORD  
 ⌚ 5 credits [tutorial classes: 48h] 📅 first term 🗨️ English
- PHYS-F105 (optional) **La structure de l'univers** | Alain JORISSEN (Coordinator) and Rodrigo ALVAREZ  
 ⌚ 5 credits [lecture: 48h] 📅 first term 🗨️ French
- PHYS-F314 (optional) **Electronique** | Gilles DE LENTDECKER (Coordinator), Juan Antonio AGUILAR SANCHEZ and Yifan YANG  
 ⌚ 5 credits [lecture: 24h, tutorial classes: 6h, practical work: 30h] 📅 first term 🗨️ French

PHYS-F317  
(optional)

[How To Make \(almost\) Any Experiment Using Digital Fabrication](#) | Denis TERWAGNE (Coordinator)

🕒 5 credits [lecture: 24h, practical work: 36h] 📅 first term 🗨️ French

PHYS-H302  
(optional)

[Eléments d'optique physique](#) | Pascal KOCKAERT (Coordinator) and François LEO

🕒 5 credits [lecture: 24h, tutorial classes: 12h, practical work: 24h] 📅 second term 🗨️ French

TEMP-0000  
(optional)

[Cours extérieurs au programme](#)

🕒 5 credits 📅 academic year 🗨️ French

