Licence Physique fondamentale

Master en physique

Doctorat en physique

Te

Physics Bachelor's (Licence en Physique) and Physics Master’s

Physics is the foundation of understanding the natural world around us, from the microscopic scale of atoms to the vastness of the cosmos. It plays a crucial role in advancing technology, shaping industries, and driving scientific innovations that impact society. The study of physics provides critical insights into the principles governing materials, energy, and the universe itself, making it an essential field for research and development.

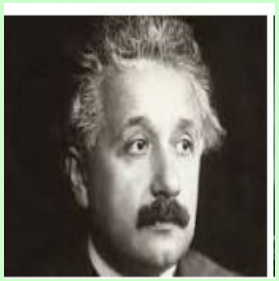
The **Faculty of Sciences** at the **Abu Bekr Belkaid University** in Tlemcen offers a wide range of master's programs that equip students with the theoretical knowledge and practical skills required to excel in various physics-related industries. Whether in materials science, energy, medical physics, or computational physics, these programs are designed to meet the evolving needs of the scientific and industrial sectors.

Why Physics?"

Ibn Al Haytham
Optics

John Johnson
Electron

Ali Mosharafa
Quantum



A. Einstein
Quantum

Eduard Boltzmann
statistics

Max Planck
Quantum

Thanks to hundreds of thousands of brilliant physicists, the fundamental principles of mechanics, thermodynamics, optics, and fluid mechanics govern our daily lives.

This is why we continue to do physics – to make our lives better."

Objective of the Bachelor's program

At the end of the 2 years of study (Bachelor's degree), the student possesses:

1. **Theoretical knowledge in Physics (Matter, light, particles, waves).**
2. **Practical and experimental knowledge (thermodynamics, optics, vibrations, electronics, etc.).**
3. **Mastery of scientific numerical programming (Python, Deep learning, Artificial Intelligence (AI) in Physics …).**

This curriculum is very rich and diverse, and it will open doors for you in the future, here or elsewhere."

Continue education in Physics: Master's degree"

The Department of Physics at the Faculty of Sciences offers 06 Academic Master's programs and 01 Professional Master's degree (Master in Medical Physics) after the Bachelor's degree.

I. Master in Medical Physics:

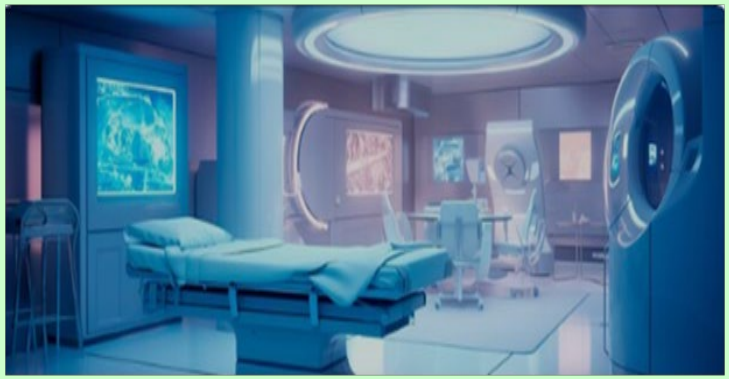
Objectives:

This program trains students in the application of physics to medicine. It covers areas such as medical imaging, radiotherapy, and nuclear medicine, preparing students for a career at the intersection of healthcare and technology.

- **Core Topics:**
  - **Medical Imaging** (MRI, X-ray, Ultrasound)
  - **Radiotherapy**
  - **Biomedical Applications of Physics**

Skills Acquired:

- Knowledge in **radiation therapy**, **dosimetry**, and **radioprotection**.
- Practical skills in **medical imaging** and **nuclear medicine**.



II. Master in Polymer Physics and Composites

Objectives:
The goal of this master's program is to train experts in the science of polymer materials and composites, providing both theoretical and practical knowledge. Students will be equipped to address real-world challenges in industries such as automotive, civil engineering, aerospace, and renewable energy.

- **Core Topics**:
  - **Material Characterization**
  - **Material Design and Fabrication**
  - **Applications in Industry**

Skills Acquired:
- In-depth understanding of polymer science and its applications in real-world problems.
- Practical skills in characterizing and developing composite materials.

III. Master in Energy Physics and Renewable Energies

Objectives:
This program provides advanced training in energy systems, focusing on renewable sources such as solar, wind, and energy storage technologies. It aims to equip students with the knowledge required to design, optimize, and implement sustainable energy solutions.

- **Core Topics**:
  - **Renewable Energy Technologies**
  - **Energy Conversion and Storage**
  - **Thermal and Fluid Mechanics for Energy Systems**

Skills Acquired:
- Understanding of renewable energy systems and their applications.
- Competence in energy management and optimization of energy systems.

[Insert relevant image of solar panels or wind turbines]

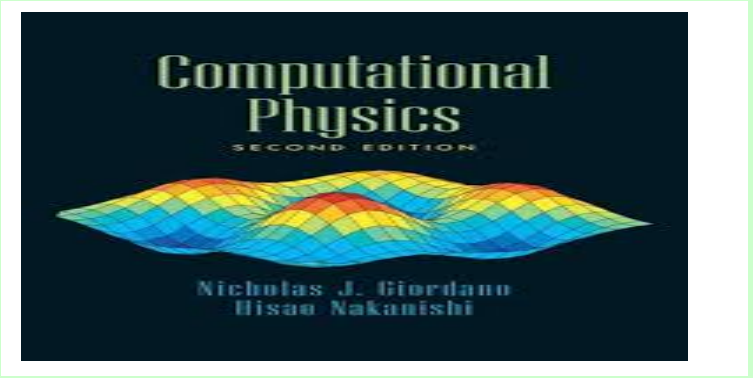
IV. Master in Computational Physics

Objectives:
This master's program focuses on the integration of **physics** and **computer science** to develop models and simulations of physical systems. With applications in various scientific and industrial sectors, this program trains students to solve complex problems using computational methods.

- **Core Topics**:
  - **Mathematical Modeling and Simulation**
  - **Computational Methods in Physics**
  - **Advanced Programming for Scientific Research**

Skills Acquired:

- Mastery in simulation and modeling of physical phenomena.
- Ability to apply computational techniques to real-world problems.



V. Master in Plasma Physics

Objectives:
Plasma physics deals with ionized gases and their applications in various industries. This master's program focuses on plasma diagnostics, modeling, and experimental techniques, preparing students for careers in research and industrial applications.

- **Core Topics**:
  - **Plasma Diagnostics**
  - **Plasma Applications in Energy and Industry**
  - **Plasma Turbulence and Nonlinear Phenomena**

Skills Acquired:

- Expertise in **plasma theory** and **experimental techniques**.
- Ability to apply plasma physics in areas like **fusion energy**, **semiconductors**, and **environmental technologies**.

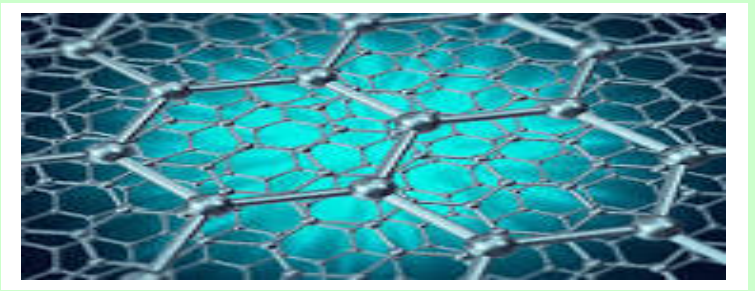
VI. Master in Condensed Matter Physics

Objectives:
This program is designed to provide students with a strong understanding of the fundamental principles of condensed matter physics, focusing on the study of materials and their properties at the atomic and molecular levels.

- Core Topics:
    - Quantum Mechanics of Materials
    - Solid-State Physics
    - Materials Characterization Techniques

Skills Acquired:

- Knowledge of material properties and experimental techniques.
- Ability to conduct research in material science for industrial and technological applications.



VII. Master in Theoretical Physics

Objectives:
The Master's program is academic in nature and aims to deepen students' knowledge in Theoretical Physics while introducing them to research, preparing them for third-cycle studies. The skills acquired in modeling and theoretically solving physical phenomena will also enhance the contribution of graduates to the economic sector. This Master's program, focused on fundamental sciences and modern mathematical modeling methods, including numerical simulations, covers areas from high-energy physics to condensed matter. It provides an in-depth education for a scientific research career and opens opportunities for doctoral studies in collaboration with laboratories in Morocco, Canada, France, and the UK.

مجال العمل

- ✓ التعليم العالي
- ✓ التعليم و التربية
- ✓ مراكز البحث،
- ✓ مخابر البحث،
- ✓ مخابر المراقبة
- ✓ مخابر التحليل،
- ✓ الصناعات في القطاعين العام والخاص...
- ✓ ميدان الطاقوي و الطاقة المتجددة
- ✓ ميدان الكهرباء و إلكترون

Don’t try to become a person of success. Try to become a person of value."