



### ***After Graduation***

The program is designed to graduate *well rounded, free-thinking individuals with inquisitive minds* who are well prepared for further study in basic and applied research and are capable of pursuing professional careers in a variety of diverse fields.

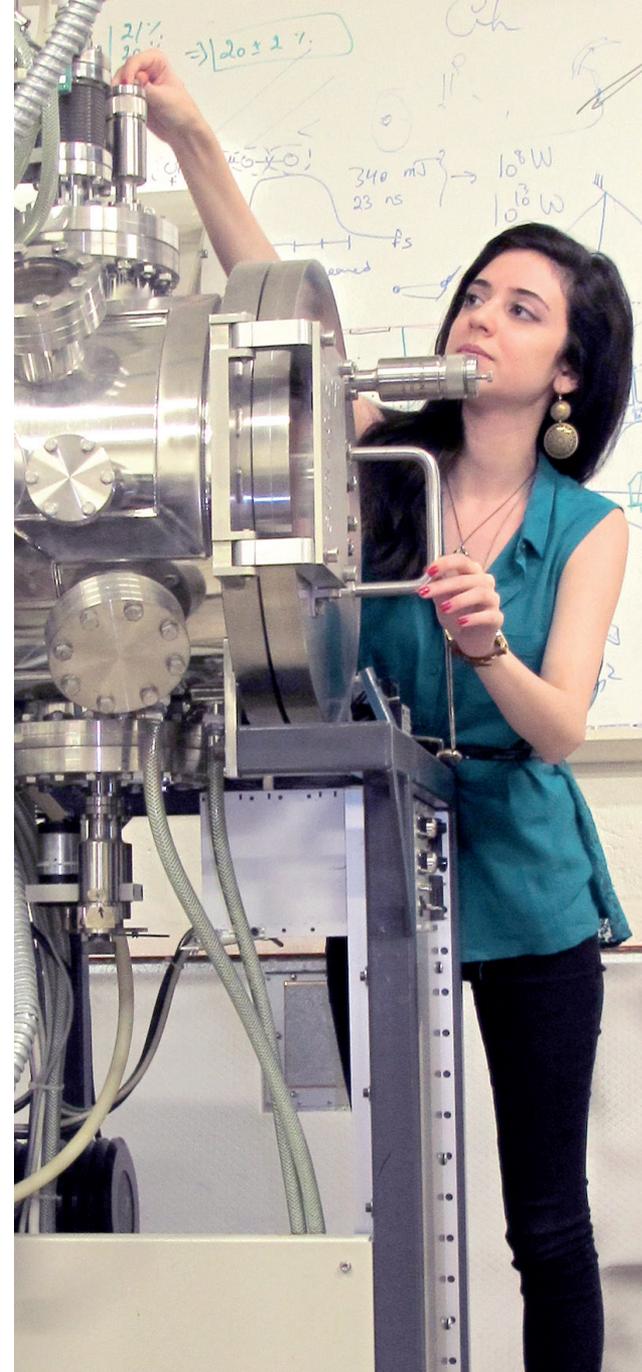
Some of our graduates continue their education and pursue a masters or doctorate degree.

Other students work in a variety of fields such as [biophysics](#), [medical physics](#), [engineering](#), or even [business related fields](#).

#### ***To learn more about the Physics Department:***

**Web** [www.aub.edu.lb/fas/physics](http://www.aub.edu.lb/fas/physics)

**Email** [physics@aub.edu.lb](mailto:physics@aub.edu.lb)



## **PHYSICS**

### ***Undergraduate Program***

#### ***Quantitative Sciences***

Physics has allowed the understanding of the universe around us from cosmological scales down to the scale of atom and nucleus. It has initiated many fields of application like lasers, computers, telecommunication devices, energy systems, and space science.

## **Faculty of Arts and Sciences**

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## Sample Courses

### PHYS 205

*Modern Physics for Life Sciences*

This course looks into Electricity, magnetism and electromagnetism applied to biological systems, as well as Modern Physics.

### PHYS 236

*Quantum Mechanics*

Students learn about the fundamental concepts of time evolution of quantum mechanical systems, the Schrodinger equation and the hydrogen atom.

### PHYS 220

*Electromagnetic Theory*

This course covers the electric potential, Gauss' law, electric currents, Ohm's, Ampere's and Faraday's law. The Maxwell's equations and electromagnetic waves.

*"Physics is crucial to understanding the world around us, the world inside us, and the world beyond us. It is the most basic and fundamental science." - American Physical Society*



Physics is a science based on mathematics which, includes: *mechanics, optics, electricity and magnetism, acoustics, and heat. Modern physics is based on quantum theory, it studies the atomic and nuclear structure of matter.*

### Curriculum

The Physics program offers a broad spectrum of courses in [physics](#), [mathematics](#) and [computer science](#). Students during their three years of training take courses in all the major fields of physics, giving them a well rounded understanding of the science. The combinations of theoretical courses with computer modeling experience and a comprehensive set of [laboratory experiments](#) help students acquire various methods of inquiry and research in physics.

Their training in physics is complemented with courses in mathematics, computer science and electrical engineering. These courses help synthesize the student's understanding of the discipline.

Through the General Education requirements students are able to develop their communication and *team-work skills*, as well as *critical and analytical thinking*.

### Research Interests

Through the faculty member's research interests, students are exposed to different fields of research.

*Fields of study and research in the Department include:*

- Theoretical Physics to apprehend our universe, the grand unification schemes and elementary particle physics, astronomy and astrophysics.
- Understanding complex motion, from stars and galaxies to geophysical flows and soft matter.
- Materials for optoelectronic and energy applications, magnetic materials.
- Nanomaterials research for better performance of optical, electrical and thermal properties.
- Renewable energy research for a cleaner and a more efficient energy source, thermonuclear fusion, solar energy.



### PHYS 222

*Computations Physics*

This course goes through numerical solutions of algebraic and transcendental equations, methods for solving systems of linear equations and differential equations.

### PHYS 225

*Introduction to Astronomy and Astrophysics*

Observation and instruments, photometry and magnitudes, radiation mechanism, celestial mechanics, stellar spectra and structure, Milky Way, galaxies and cosmology.

### PHYS 237

*Introduction to Plasma Physics*

Occurrence of plasma in nature and laboratory, single particle motion in an electric and magnetic fields. Plasma oscillations, hydro-magnetic waves, collisions and instabilities.