

WHAT A PHYSICS GRADUATE CAN DO...

The versatile and solid training of physicists qualifies them for careers as either scientists or technicians. The main fields in which physics graduates can work are:

Teaching

One of the main professional activities of physicists is the **training of future physicists**. Physicists are qualified to work as teachers of physics and other sciences at the higher education level as well as in primary and secondary schools.

Research

Physicists may pursue careers in research, especially in the public sector. The greater part of technological research and innovation in Spain is conducted at universities and public research institutes. Physicists can also undertake research careers in private companies such as those dedicated to information technologies; a sector characterised for its high mobility.

The business world: industry and services

Many industries and companies depend on scientific knowledge to conduct their activity. Physicists can work in sales management, marketing, project management and technical jobs related to renewable energies, computer science and communications, safety and hygiene, quality management and many others.

Health care

Medical physics is the application of physics to new technologies for diagnostic and therapeutic purposes. Physicists based in hospitals can work in healthcare-related jobs such as the programming of treatments using ionising radiation, the control and design of radiological equipment and facilities or the protection and monitoring of hospital staff and areas exposed to radiation.

Other professions

Physicists can also work independently as self-employed professionals to sign and certify projects.

WHY STUDY PHYSICS?

If you are interested in the world around you and eager to learn why things occur; if you would like to pursue a career in fields related to science, technology, computer science, medicine, new energies or teaching; if you want to earn a degree that will prepare you for the demands of national and international job markets, the First Degree in Physics is the right choice for you.



Physics

More information at:

<http://www.uco.es/ciencias/>



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UNIVERSIDAD DE CORDOBA



UNIVERSITY OF CORDOBA
Faculty of Science

First Degree in
PHYSICS





LEARNING OUTCOMES

The First Degree in Physics provides students with the most valuable competences required in today's job market including the capacity to acquire new knowledge quickly, the ability to work on a team and strong communication skills.

The degree trains students to study and analyse physical phenomena and their laws, while preparing them to perform theoretical and experimental research into the properties of nature or to teach.

The specific competences of the degree are aimed at acquiring a general and basic knowledge of physics and developing the necessary skills to conduct experiments, model, estimate and calculate and to apply this knowledge in the professional world.

GENERAL OBJECTIVES OF THE FIRST DEGREE

1. Acquire theoretical and experimental knowledge of basic topics in physics as well as more in-depth knowledge of specific topics in the discipline.
2. Develop the capacity to apply the knowledge acquired for further study in a wide range of scientific or technological fields or in the professional setting. Attain the skills required to discuss and defend ideas in the academic and other spheres.
3. Acquire the skills to compile information on a topic, analyse the information, extract the main ideas, make reasonable judgments and propose solutions using mathematical and computational methods and information and communication technologies.
4. Foster an entrepreneurial attitude through solid training in basic curricular content and current topics (the environment, renewable energies, etc.) as well as through direct contact with the business and industrial sector by means of internships.

COURSE STRUCTURE

FIRST YEAR	
1 st Semester	2 nd Semester
<ul style="list-style-type: none"> ▪ Fundamentals of Physics I ▪ Mathematical Analysis I ▪ Linear Algebra and Geometry I ▪ Chemistry ▪ Scientific Programming 	<ul style="list-style-type: none"> ▪ Fundamentals of Physics II ▪ Mathematical Analysis II ▪ Linear Algebra and Geometry II ▪ Experimental Techniques in Physics ▪ Mathematical Methods I
SECOND YEAR	
1 st Semester	2 nd Semester
<ul style="list-style-type: none"> ▪ Wave Mechanics I ▪ Thermodynamics I ▪ Mathematical Methods II ▪ Astrophysics and Cosmology ▪ Optional course 	<ul style="list-style-type: none"> ▪ Wave Mechanics II ▪ Thermodynamics II ▪ Mathematical Methods III ▪ Numerical Methods and Simulation ▪ Optional course
THIRD YEAR	
1 st Semester	2 nd Semester
<ul style="list-style-type: none"> ▪ Electromagnetism I ▪ Optics I ▪ Quantum Physics I ▪ Statistical Physics ▪ Continuum Mechanics 	<ul style="list-style-type: none"> ▪ Electromagnetism II ▪ Optics II ▪ Quantum Physics II ▪ Electric Circuits ▪ Projects
FOURTH YEAR	
1 st Semester	2 nd Semester
<ul style="list-style-type: none"> ▪ Solid State Physics ▪ Quantum Mechanics ▪ Classical Electrodynamics ▪ Atomic and Molecular Physics ▪ Optional course 	<ul style="list-style-type: none"> ▪ Final Project ▪ Electronic Physics ▪ Nuclear and Particle Physics ▪ Electromagnetic Wave Propagation ▪ Optional course
OPTIONAL COURSES	
<ul style="list-style-type: none"> ▪ Business Economics and Management ▪ Advanced Scientific Programming ▪ Meteorology and Climatology ▪ Digital Electronics ▪ Ionising Radiation ▪ History of Physics 	<ul style="list-style-type: none"> ▪ Advanced Optics ▪ Microcontrollers ▪ Advanced Numerical Methods ▪ Electronic Instrumentation ▪ Plasma Physics ▪ Fundamentals of Spectroscopy

INTERNSHIPS

Doing an internship at outside institutions and companies gives students the opportunity to apply the knowledge and skills they have acquired at university. It is the perfect complement to formal academic training and a highly inspiring experience that is particularly important for those undertaking a scientific and technical degree. The UCO School of Science recognises credits earned through internships. The School of Science currently offers more than 350 internship placements at local, regional and national companies and institutions.

NATIONAL AND INTERNATIONAL MOBILITY PROGRAMMES

Academic mobility is a fundamental element in the personal and academic development of students. Mobility improves job opportunities, while fostering respect for diversity and the understanding of different cultures. The UCO School of Science participates in a wide range of national and international student mobility programmes to aid students in enhancing their academic training. These include the SICUE-SENECA Programme for mobility between Spanish universities and the ERASMUS and Leonardo da Vinci Programmes in Europe for education and training internships. Other mobility programmes are also available in America and Asia.

MASTER AND PhD PROGRAMMES

The First Degree in Physics provides students direct access to the job market and the opportunity to further their education through Master's or PhD programmes such as those offered by the University of Cordoba.

RESOURCES AND SERVICES

A large number of facilities and services are available on the UCO Rabanales Campus:

- Lecture halls, interactive classrooms, computer rooms and laboratories
- Library and study halls
- Cafeterias
- Bank
- Job information office
- Copy service
- Lucano Student Residence Hall
- Mental Health Service
- Health Care Unit
- Sports facilities (UCOdeporte)
- Wifi