

BSc IN PHYSICS

Duration: 4 years full time. 60 ECTS per year. **Language:** Spanish.

Program aims:

The study of the different subjects taught in the Physics Degree allows students to understand the laws governing nature in all its dimensions, from elementary particles to the evolution of the universe. Students graduated in Physics are professionally trained in the scientific and technological field to be able to use the general principles of Physics from the theoretical and experimental points of view, as well as specific measurement techniques and common instrumentation. Our Physics Degree program provides a solid mathematical background needed to analyze the different physical processes and introduces students to advanced computer tools required to carry out tasks of calculation, modeling and analysis of large volumes of information. This degree offers training particularly oriented towards research, innovation and development within multidisciplinary teams. It also allows students to access postgraduate programs.

Structure:

Year 1. In the first year, students must enroll in the following subjects:

Subject	ECTS	Semester
26900 - Fundamentals of Physics I ^{ELF}	6	S1
26901 - Chemistry ^{ELF}	6	S1
26902 - Algebra I ^{ELF}	6	S1
26903 - Calculus ^{ELF}	6	S1
26904 - Computer Science ^{ELF}	6	S1
26905 - Fundamentals of Physics II ^{ELF}	6	S2
26907 - Algebra II ^{ELF}	6	S2
26906 - Physics Laboratory Work ^{ELF}	6	S2
26908 - Differential Calculus ^{ELF}	6	S2

S1: Semester 1. Mid-September to mid-January S2: Semester 2. Beginning-February to end-May

ELF: English-language friendly subject (see first page)

In the first year, they must also select one subject from:

Subject	ECTS	Semester
26909 - Biology ^{ELF}	6	S2
26910 - Geology ^{ELF}	6	S2

Year 2. In the second year, students must enroll in the following subjects:

Subject	ECTS	Semester
26911 - Physical Techniques I ^{ELF}	8	YL
26912 - Classical Mechanics I ^{ELF}	7	S1
26913 - Integral Calculus and Geometry ^{ELF}	6	S1
26914 - Differential Equations ^{ELF}	6	S1
26915 - Electromagnetism ^{ELF}	8	S1
26916 - Classical Mechanics II	7	S2
26917 - Mathematical Methods for Physics ^{ELF}	6	S2
26918 - Computational Physics ^{ELF}	6	S2
26919 - Electromagnetic Waves ^{ELF}	6	S2

YL: Year-long. Mid-September to end-May

Year 3. In the third year, students must enroll in the following subjects:

Subject	ECTS	Semester
26920 – Physical Techniques II ^{ELF}	1	YL
26921 - Quantum Physics I ^{ELF}	7	S1
26922 - Thermodynamics ^{ELF}	6	S1
26923 - Optics ^{ELF}	8	S1
26924 - Quantum Physics II ^{ELF}	8	S2
26925 - Statistical Physics ^{ELF}	6	S2

In the first semester of the third year they must also choose one subject from those marked with a **3/4** in the list of optative subjects below; in the second semester they must choose two subjects from those marked with a **3/4** in the list of optative subjects.

Year 4. In the fourth year, students must enroll in the following subjects:

Subject	ECTS	Semester
26926 - Solid State I ^{ELF}	6	S1
26927 - Physical Techniques III ^{ELF}	6	S1
26928 - Physical Electronics	6	S1
26929 - Nuclear and Particle Physics ^{ELF}	6	S1
26930 - Solid State II ^{ELF}	6	S2
26931 – Undergraduate Dissertation * ^{ELF}	8	S2

In the fourth year, they must also select four subjects from the list of optional subjects:

Subject (optional for third and fourth year)	ECTS	Semester
26932 - Astronomy and Astrophysics ^{ELF} 3/4	5	S1
26942 - Microwaves: Propagation and Aerials ^{ELF} 3/4	5	S1
26946 - Dosimetry and Radioprotection ^{ELF}	5	S1
26953 - Quantum Mechanics ^{ELF}	5	S1
26933 - Chaos and Nonlinear Dynamical Systems ^{ELF}	5	S2
<u>26934 - Atmospheric Physics</u> 3/4	5	S1
26935 - Fluid Physics 3/4	5	S1
26937 - Gravity and Cosmology ^{ELF} 3/4	5	S2
26938 - History of Science 3/4	5	S2
26939 - Illumination and Colorimetry	5	S2
26940 - Laser and Applications ^{ELF} 3/4	5	S2
26941 - Micro and Nano-Systems ^{ELF} 3/4	5	S2
26944 - Applications of Diffraction and Interferometry	5	**
26945 - Devices and Photonic Systems ^{ELF}	5	S2
26947 – Spectroscopy ^{ELF}	5	S2
26949 - Biological Physics ^{ELF}	5	S2
26950 - High Energy Physics ^{ELF}	5	S2
26951 - Nuclear Physics and Technology ^{ELF}	5	S2
26952 - Geophysics ^{ELF}	5	S2
<u>26957 - Digital Systems</u>	5	S1

Not all the optional subjects are available every year. A list of the available subjects for the following year (starting in September) is published in June. The subjects with ** in the Semester column are not being offered in 2018/2019.

***Undergraduate Dissertation**

The Undergraduate Dissertation (UD) is a 200-hour project on any of the subjects of the degree. It is undertaken during the second semester of the 4th year. Students are supervised by a professor who defines the objectives of the Project and guides them along the work. Students must write a report and make a public defense of it.