

BSc IN MATHEMATICS

Duration: 4 years full time. 60 ECTS per

year. **Language:** Spanish

Program aims:

The Bachelor's Degree in Mathematics aims to equip scientists with knowledge about the main concepts, methods and results of the various fields of Mathematics, and the main objectives are:

- To apply analytical, abstract and logical thinking in approaching and finding solutions to problems, in both academic and professional contexts.
- To participate in all phases of problem-solving in scientific, technological or other areas requiring the use of mathematical tools: modeling, formulation, analysis, resolution and, where applicable, data processing.
- To effectively transmit knowledge, results and mathematical ideas.
- To recognize the presence of Mathematics in everyday life, through Nature, Science, Technology and Arts.
- To directly access to the labor market in jobs with medium / high responsibility.
- To continue specialized studies, both in mathematical and scientific or technological disciplines requiring mathematical knowledge

Structure:

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

Module	ECTS	Semester
27000 - Linear algebra ^{ELF}	13.5	YL
27001 - Calculus I ^{ELF}	13.5	YL
27002 - General physics ^{ELF}	12.0	YL
27003 - Computer Science I ^{ELF}	9.0	S1
27004 - Numbers and Sets ^{ELF}	6.0	S1
27005 - Graphs and	6.0	S2

S1: Semester 1. Mid-September to mid-January

S2: Semester 2. Beginning-February to end-May

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

^{ELF}: English-language friendly module (see first page)

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

Module	ECTS	Semester
27006 - Calculus II ^{ELF}	15.0	YL
27007 - Numerical Analysis I ^{ELF}	9.0	YL

27008 - General Topology ^{ELF}	9.0	YL
27009 - Ordinary Differential Equations ^{ELF}	9.0	YL
27010 - Linear Geometry (in English)	6.0	S1
27011 - Algebraic Structures (in English)	6.0	S2
27012 - Introduction to Probability and	6.0	S2

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

Module	ECTS	Semester
27013 - Geometry of Curves and	10.5	YL
27014 - Complex Analysis (in English)	9.0	YL
27015 - Numerical Analysis II	9.0	YL
27016 - Probability (in English)	6.0	S1
27017 - Galois Theory (in English)	6.0	S1
27018 - Operations Research (in	6.0	S1
27019 - Mathematical Statistics ^{ELF}	7.5	S2
27020 - Partial Differential Equations ^{ELF}	6.0	S2

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

Module	ECTS	Semester
27021 - Lebesgue Integral ^{ELF}	6.0	S1
27022 - Mathematical Modelling ^{ELF}	6.0	S1
27023 – Undergraduate Dissertation*	10.0	S2

In this fourth year, students must also select six modules from the list of optional modules:

Module	ECTS	Semester
27024 - Computer Science II ^{ELF}	6.0	S1
27027 - Stochastic Optimization ^{ELF}	6.0	S1
27033 - Regression Methods ^{ELF}	6.0	S1
27034 - Functional Analysis ^{ELF}	6.0	S1
27039 - History of Mathematics ^{ELF}	6.0	S1
27041 - Differentiable Manifolds ^{ELF}	6.0	S1
27043 - Algebraic Curves ^{ELF}	6.0	S1
27025 - Database Systems I ^{ELF}	6.0	S2
27029 - Numerical Simulation in Ordinary Differential	6.0	S1
27030 - Numerical Treatment of Partial Differential Equations ^{ELF}	6.0	S2

27032 - Probability Theory ^{ELF}	6.0	S2
27035 - Fourier Analysis ^{ELF}	6.0	S2
27038 - Celestial Mechanics ^{ELF}	6.0	S2
27040 - Topology of Surfaces ^{ELF}	6.0	S2
27045 - Applied and Computational Algebra ^{ELF}	6.0	S2

***Undergraduate Dissertation**

The Undergraduate Dissertation (UD) is a 250-hour project on any of the modules of the Degree. It is done 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. The students must write a report and make a public defense of work.