

MSc IN MATHEMATICAL MODELLING AND RESEARCH, STATISTICS AND COMPUTING

Duration: 1 year full time. 60 ECTS.

Language: Spanish.

Program aims:

The objective of this Master's Degree program is to train researchers and professionals in Mathematics and its applications and equip them with high technical and scientific skills, knowledge and practical experience in the applications of Mathematics, Statistics and in the use of Computer Science in R+D+I. Students will be capable of joining competitive research teams and developing their own research activity in all fields where Mathematics is involved. They will also have a suitable training to enroll in a PhD program. Moreover, they will be capable of understanding, modeling, and solving problems arising in business, engineering and other sciences, and developing software applications for the numerical simulation of real-life problems.

Structure:

The Master is a joint program involving five universities: University of Basque Country, University of La Rioja, Public University of Navarre, University of Oviedo, University of La Laguna and University of Zaragoza. Modules in the first semester (October-December) are taught at the University of Basque Country and modules in the second semester (February-March) are taught at University of Zaragoza. There are also two/three modules taught in April at one of the other universities, depending on the year. The list of modules in each semester may vary from year to year. Two modules are taught online.

All modules in the Master except the Master's Dissertation are optional. Students must select 8 modules from the following list:

Module	ECTS	Semester
69251 - Databases and object-oriented programming ^{ELF}	6.0	S1 (UBC)
69252 - Partial differential equations ^{ELF}	6.0	S1 (UBC)
69253 - Statistical modeling ^{ELF}	6.0	S1 (UBC)
69255 - Numerical methods in physics and engineering ^{ELF}	6.0	S1 (UBC)
69264 - Groups and representations ^{ELF}	6.0	S1 (UBC)
69256 - Time series ^{ELF}	6.0	S1 (UBC)
69257 - Control theory ^{ELF}	6.0	S1 (UBC)
69258 - Optimization techniques ^{ELF}	6.0	S1 (UBC)
69259 - Bio-inspired algorithms and evolutionary computation techniques ^{ELF}	6.0	S2 (UZ)
69254 - Mathematical models in logistics ^{ELF}	6.0	S2 (UZ)
69261 - Nonlinear dynamics and applications ^{ELF}	6.0	S2 (UR)

69262 - Computer-aided geometric design ^{ELF}	6.0	S2 (UZ)
69265 - Introduction to data mining ^{ELF}	6.0	S2 (UZ)
69267 - Stochastic processes and probability ^{ELF}	6.0	S2 (UZ)
69268 - Scientific programming and computational algebra ^{ELF}	6.0	S2 (UR-UZ)
69269 - Algebraic topology ^{ELF}	6.0	S2 (UZ)
69263 - Geometry of manifolds ^{ELF}	6.0	S2 (UZ)
69250 - Functional and Fourier analysis ^{ELF}	6.0	S2 (UR)
69266 - Signal processing and image ^{ELF}	6.0	OL
69260 - Encoding and cryptography ^{ELF}	6.0	OL

S1 (UBC): Semester 1. October to December. University of Basque Country

S2 (UZ): Semester 2. February-March. University of Zaragoza

S2 (ULL): Semester 2. April. University of La Rioja

OL: Online module

This table is applicable for the academic year 2018/19. Semesters, as well as the university where they are taught, may change for some modules in 2019/20. A table for the academic year 2019/20 will be available in January 2019.

Master's Dissertation^{ELF}

The Master's Dissertation (MD) is a 300-hour compulsory project on any of the modules of the Degree. It is done during the second semester. There are two types of Master's Dissertation that the student can take depending on his/her interests. The first type is a research project. The second type consists on solving a problem posed by a company or institution. Students are supervised by a professor who defines the specific objectives of the Project and guides him/her along the work. Student must write a report and make a public defense of the work.