

$$\frac{\pm\sqrt{b^2 - 4ac}}{2a}$$

$$-q=0$$
$$x=6-2y$$

$$* x+a=b$$
$$f(x)$$

**BACHELOR'S DEGREE IN
MATHEMATICS
+ BACHELOR'S DEGREE IN
MUSIC
(Double degree)**

esmuc
ESCOLA SUPERIOR DE MÚSICA DE CATALUNYA



School of Mathematics
and Statistics



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

BACHELOR'S DEGREE IN MATHEMATICS + BACHELOR'S DEGREE IN MUSIC (Double degree)

The double degree comprising the bachelor's degree in Mathematics, taught at the School of Mathematics and Statistics (FME) of the Universitat Politècnica de Catalunya · BarcelonaTech (UPC), and the bachelor's degree in Music, taught at the Escola Superior de Música de Catalunya (ESMUC), is the only degree in Catalonia that combines the two disciplines. It springs from the need for a double degree that responds to the demand of students who were previously obliged to choose between one degree or the other.

89%
employment rate among ESMUC graduates

Source: First graduate employment survey of graduates of performing and applied arts degrees by the Catalan University Quality Assurance Agency (AQU Catalunya)

82%
of graduates would choose to take the same degree at the ESMUC again

The bachelor's degree in Mathematics at the FME will provide you with comprehensive, challenging education in all of the basic subjects of mathematics and its applications. You will be trained to think rigorously and conceptually, and in applied aspects of science and technology. The degree has been accredited as excellent by AQU Catalunya for its quality and the level of academic achievement demanded of students. The degree in Music has been issued a favourable report by AQU Catalunya and is equivalent to a bachelor's degree to all extents and purposes. You can take the double degree from the music specialisations Composition and Interpretation. These specialisations aim to produce professionals who are highly qualified in composing and interpreting music, have their own aesthetics and language and are equipped to work with the formats and media and in the genres and contexts that best respond to the current job market.

The only double degree in Mathematics and Music in Catalonia

+250
job offers in the FME's job bank, three times as many as the number of graduates

100%
employment rate among FME graduates
Source: Sixth graduate employment survey of Catalan universities by the Catalan University Quality Assurance Agency (AQU Catalunya)

Aimed at

The double degree is designed for highly capable students who are interested in developing a career in mathematics and music. Up to now, students with this combined interest were obliged to take two separate degrees, with a study load of 480 ECTS credits. They can now graduate with a double degree by passing the 420 ECTS credits of this adapted curriculum.

Professional opportunities

The double degree provides the skills needed to occupy jobs related to the two disciplines. In addition to professions linked to qualifications of excellence in music, as a graduate in Mathematics you may pursue a career in research and university teaching, banking and finance, insurance and services, secondary education, industry, consulting and administration, ICT companies, biomedical companies, etc.

Entrance requirements

To gain admission to this degree, you must have at least the minimum entrance mark for the bachelor's degree in Mathematics at the FME and pass a specific mathematics exam and an entrance exam at the ESMUC. On the basis of their marks in these exams, candidates will be chosen for the selection process. Five places are available every academic year.

Organisation

The double degree is taken over 10 semesters (five academic years) and begins in September. The curricular pathway is personalised and timetables are adapted. Subjects on the bachelor's degree in Mathematics are taught at the FME (Carrer Pau Gargallo, 14) and subjects on the degree in Music at the ESMUC (Carrer Padilla, 155, L'Auditori building), both in Barcelona. Students must enrol at both schools and credits will automatically be recognised.

ESMUC

The ESMUC is the only public higher education institution that awards the degree in Music. It also offers master's degrees and postgraduate and lifelong training courses. It began to offer courses in 2001, and it currently has more than 750 students of 25 nationalities. The ESMUC follows a comprehensive educational model and aims to become an international benchmark for its excellence in education, as well as a sociological mirror of the country that promotes the educational and cultural ecosystem in the matter of music.

FME

The FME, founded in 1992, is a benchmark school that puts students at the centre of its teaching activity and provides one-on-one attention. The bachelor's degree in Mathematics has acquired a reputation for excellence, quality and the level of academic achievement it demands of students. It is chosen by students with the best academic records and has one of the highest minimum entrance marks in Catalonia.

Curriculum

420 ECTS credits

1st year

Affine and Euclidean Geometry	7.5
Differential Calculus	7.5
Fundamentals of Mathematics	7.5
Linear Algebra	7.5
Single Variable Calculus	7.5
Choir	2
Communication and Body Training I	2
Chamber Music I and II	4
General Auditory Perception	3
Lied I	2
Music and Culture I and II	6
Musical Analysis Methods	4
Principal Instrument I	14
Secondary Instrument I	2

2nd year

Discrete Mathematics	7.5
Informatics	7.5
Multilinear Algebra and Geometry	7.5
Numerical Linear Algebra	7.5
Real Analysis	7.5
Chamber Music III and IV	4
Communication and Body Training II	2
Fundamentals of Composition	4
Improvisation and Accompaniment for Pianists I and II	6
Music and Culture III	3
Musical Analysis I	3
Principal Instrument II	14
Professional Development	3
Secondary Instrument II and III	4

3rd year

Complex Variable Functions	7.5
Integral Calculus	7.5
Mathematical Programming	7.5
Physics	7.5
Topology	7.5
Aesthetics	4
Analysis Workshop I	2
Chamber Music V and VI	4
Improvisation and Accompaniment for Pianists III	3
Lied II	2
Principal Instrument III and IV	28
Secondary Instrument IV and V	4
Specific Auditory Perception	2

4th year

Algorithmics	7.5
Mathematical Models of Physics	7.5
Ordinary Differential Equations	7.5
Partial Differential Equations	7.5
Probability Theory	7.5
Statistics	7.5
Chamber Music VII	2
History of 19th Century Music	4
Improvisation and Accompaniment for Pianists IV	4
Interpretation Seminar	2
Principal Instrument V and VI	28
Secondary Instrument VI	2

5th year

Algebraic Structures	7.5
Differential Geometry	7.5
Mathematical Models of Technology	9
Numerical Calculus	7.5
Analysis Workshop II	2
Contemporary Music Repertoire and Techniques	2
Fundamentals of Performance Practice	3
Principal Instrument VII and VIII	26
Specific Instrumental Repertoire	3
Bachelor's Thesis, Mathematics	15
Bachelor's Thesis, Music	8

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