FIELD OF STUDY

PURE SCIENCES

RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

CAMPUS FRANCE

Mathematics

- **2,4** million jobs are dependent on math, i.e. 9% of total employment in France
- **15%** of total GPD
- **4,000** lecturers and researchers in mathematics
- **75** research laboratories in mathematics
- **13** French mathematicians were awarded the Fields Medal
- **4** Abel prizes awarded to French mathematicians
- **3rd** place in global publications, 7% of French publications
- **6,600** Master's students, 2,000 PhD students in mathematics (2013)

Sources: Union des Industries Chimiques - www.uic.fr

Since the 16th century, French mathematicians have contributed considerably to the progress of their field. Their prestigious names are famous the world over: François Viète in the 16th century, René Descartes, Blaise Pascal, Pierre de Fermat, Girard Desargues in the 17th century; Jean d'Alembert, Joseph Louis Lagrange, Adrien-Marie Legendre, Joseph Fourier in the 18th century; Évariste Galois, Augustin-Louis Cauchy, Joseph Liouville, Henri Poincaré in the 19th century; Jacques Hadamard, André Weil, Jean Leray, Laurent Schwartz, Jean-Pierre Serre in the 20th, Laurent Laforgue, Jacques Tits, French-Russian Mikhaïl Leonidovich, Cédric Villani, Hugo Duminil-Copin and the French-Brazilian Artur Âvila in the 21st.

France is one of the leading nations in mathematics alongside the US, Russia and Great Britain. Its international influence is reflected by the numerous prestigious prizes – Fields Medal, Wolf Prize, Crafoord Prize – awarded to its mathematicians, and by the great number of French speakers invited to events.

The field of mathematics accounts for many diverse sectors and academic programs in French higher education in universities and engineering schools. It encompasses all applied professions, with a strong Master's-level specialization, and provides research and development training in physics, electronics, computer science, chemistry, biology, with specializations in statistics, engineering, industry, and artificial intelligence.

International

French mathematicians have the reputation to be among the best in the world. Over one-fifth of the Field Medal – one of the area's most prestigious prizes, traditionally awarded by the International Mathematical Union during its quadrennial International Congress of Mathematicians – have been awarded to French mathematicians. At the same Congress, France is consistently represented by a significant number of invited speakers, which attests to its high level in mathematics. French math enjoys an international scope, notably through traditional cooperation with less developed countries, thanks namely through the UNESCO-recognized International Center for Pure and Applied Mathematics (CIMPA) in Nice, an international organization that promotes mathematics in developing countries.

RELATED FIELDS

• Aerospace • Artificial Intelligence • Astronomy • Biology • Biotechnology • Chemistry • Computer Science • Digital • Earth and Space Sciences • Ecology • Economics • Electronics • Engineering • Environment • Geography • Geosciences • Human Sciences • Life Sciences • Management • Mechanics • Pharmacology • Physics

SUBFIELDS

• Accounting • Algebra • Algorithms and theorems • Applied mathematics • Arithmetic • Automation • Banking • Calculations • Demography • Epidemiology • Equations • Finance • Genetics • Geometry • Numbers • Nuclear • Numerical computation • Probability • Robotics • Statistics

Useful links

- Agence pour les Mathématiques en Interaction avec l'Entreprise et la Société (AMIES) : **www.agence-maths-entreprises.fr**
- Annuaire de la communauté mathématique française : **www.annuaire.emath.fr**
- Annuaire des laboratoires et unités de recherche en mathématiques : **www.portail.math.cnrs.fr/annuaire/Laboratoires**
- Association pour la Recherche en Didactique des Mathématiques (ARDM) : **www.ardm.eu**
- Centre International de Mathématiques Pures et Appliquées (CIPAM) : **www.cimpa.info**
- Commission française pour l'enseignement des mathématiques (CFEM) : **www.cfem.asso.fr**
- E-math.fr, le domaine des maths en France : **www.emath.fr**
- International Mathematical Union (IMU): **www.mathunion.org**
- Portail Math : **www.portail.math.cnrs.fr**
- Société de mathématiques appliquées et industrielles (SMAI) : **www.smai.emath.fr**
- Société française de statistique (SFdS) : **www.sfds.asso.fr**
- Société mathématique de France : **www.smf.emath.fr**

LEVEL Licence

INTENSIVE COURSE: CLASSE PRÉPARATOIRE AUX GRANDES ÉCOLES (CPGE)

YEARS OF POST-SECONDARY STUDIES – L2

Some *Lycées* (high schools) offer two prep classes for the competitive entrance exams to the prestigious engineering *Grandes écoles* in the first year: the **Mathematics, Physics and Engineering Sciences preparatory class (MPSI)** with Computer Science and Industrial Science options; and the **Mathematics, Physics in Engineering and Computer Science preparatory class** (MP2I). In the second year, the following courses are offered: **the Mathematics-Physics preparatory class (MP)**, with Computer Science and Industrial Science options, and **the Mathematics, Physics, Computer Science preparatory class (MPI).**

INTENSIVE COURSE: CLASSE UNIVERSITAIRE PRÉPARATOIRE AUX GRANDES ÉCOLES (CUPGE)

2 YEARS OF POST-SECONDARY STUDIES – L2

The **CUPGE** is a pathway in "Mathematics and Physics" integrated to the Mathematics program of the Bachelor for the preparation, in two years, of the entrance exams to the *Grandes écoles*.

BACHELOR'S DEGREE

3 YEARS OF POST-SECONDARY STUDIES – L3
180 ECTS credits

The Bachelor's degree in Mathematics offers several pathways: Mathematics for teaching; Mathematics for engineering and research; General and applied mathematics; Mathematics finance-economy; Fundamental mathematics; Mathematics-economy; Economics and finance: Mathematical engineering; Computer science, physics, chemistry; Engineering sciences; Engineering - Data sciences; Data sciences, health; Multidisciplinary mathematics; Mathematics - mechanics; Mathematics for economics; Mathematics and teaching; Mathematics for research: LAS option *accès santé* (health access option).

The double Bachelor's degree in Mathematics offers several options: Management; Natural History, Humanities, Heritage, Society; Electronics; Environment; History and Philosophy of science and technology; Mechanics; Physics; Chinese; Communication and scientific mediation; Innovation in health; Data modeling and analysis.

Some specializations encompass other disciplines:
- Mathematics and Applied Sciences
- Mathematics applied to Social Sciences (MASS) pathway: Statistics and computer science
- Mathematics applied to business management (MIAGE)
- Mathematics, physics, chemistry, computer science
- Mathematics, physics, engineering sciences
- Mathematics, life sciences

Other Bachelor specializations include pathways in Mathematics:
- Economics and Management, pathway: Mathematics, computer science, economics
- Economics and Mathematics
- Computer Science, pathway: Mathematics, computer science
- Computer Science – Mathematics
- Physics, pathway: Mathematics and in-depth physics
- Science and Technology, pathway: Chemistry - physics - computer science - mathematics

LEVEL Master

Mathematics

MASTER'S DEGREE

5 YEARS OF POSTGRADUATE STUDIES – M2
120 ECTS credits

The **Mathematics** and **Applied Mathematics** degrees offer several applications and specializations: Algebra, Number Theory and Applications; Applied Analysis and Modelling; Modelling and Numerical Analysis; Actuarial Science; Statistical and Financial Engineering; Insurance; Economics and Finance; Sciences and Humanities.

Statistics and data processing; statistical modeling.

The **Science, Technology and Health** program offers a wide range of applications and specializations: Applied Mathematics and Computer Science; Mathematics and Interactions; Fundamental and Applied Mathematics; Applied Mathematics, Statistics; Mathematics and Computer Science; Mathematics, Computer Science and Cryptology Applications; Finance, Banking, Finance, Insurance; Financial Engineering and Modelling; Mathematical Engineering and Computer Tools; Actuarial Science...

Other programs have Mathematics courses:

- **Engineering sciences:** Applied mathematics and information sciences
- **Life and Environmental Sciences and Technologies:** Mathematics and modeling economic and social sciences
- **Law, Economics, Management and Social Sciences:** Mathematics and computer science applied to human and social sciences; Mathematics, computer science, decision-making and organization.

Engineering schools deliver the Master's degree in **Engineering Sciences** with the **Applied Mathematics mention** and several specializations in Information Sciences and Synthetic and Systems Biology; Design and Management of Complex Computer Systems, Vision and Learning, etc.

In the field of agriculture and agronomy, the **Life and Environmental Sciences and Technologies** program offers a pathway in **Mathematics and Modelling in Economic and Social Sciences** with a specialization in Comparative Dynamics of Development.

www.campusfrance.org > Students > Studying > Find your programme

Training programs in English:
Algebra, Geometry and Number Theory; Analysis, Number Theory and Geometry; Applied Mathematics; Computational and Mathematical Biology; Data Sciences: Health, Insurance and Finance; Applied Analysis and Mathematical Physics; Mathematics and Applications; Mathematics of Artificial Intelligence; Mathematics, Statistics; Mathematics, Modeling and Simulation; Mathematics of Randomness; Stochastic Tools and Computational Methods for Decision; Mathematics, Vision, Learning; Mathematics and Interactions; Quantitative finance.

TITLE OF ENGINEER

MASTER'S LEVEL– 5 YEARS OF POSTGRADUATE STUDIES – M2
120 ECTS credits

French engineering schools deliver diplomas accredited by the CTI (Engineering Accreditation Institution), the title of Engineer and Master's degrees. 25 schools and institutes offer specializations in Applied Mathematics and Computer Science.

www.cti-commission.fr (in French) > Accréditation > Rechercher une école ou une formation

ECTS: European Credit Transfer and Accumulation System