Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

SCIENCES, TECHNOLOGIES, SANTÉ, INGÉNIERIE

Parcours Master of Science in industrial and applied mathematics (MSIAM)

Master Mathématiques et applications

Université Grenoble Alpes

Niveau d'étude visé
Bac +5

ECTS
120 crédits

Durée
2 ans

Composante
UFR Informatique, mathématiques et mathématiques appliquées (IM2AG), Grenoble INP - Ensimag (Informatique, mathématiques appliquées et télécommunications), UGA

Langue(s) d'enseignement
Anglais

Présentation

Currently, applied mathematics is an area that provides many job opportunities, in industry and in the academic world. There is a great demand for mathematical engineers on topics such as scientific computation, big data analysis, imaging and computer graphics, with applications in many fields such as physics, medicine, biology, engineering, finance, environmental sciences.
The master of Science in industrial and applied mathematics (MSIAM) offers a large spectrum of courses, covering areas where the research in applied math in Grenoble is at the best level. Our graduates are trained to become experts and leaders in scientific and technological projects where mathematical modeling and computing issues are central, in industry or research. A large and distinguished graduate Faculty participate in the program, bringing their expertise in a wide range of areas of mathematics including applied analysis, numerical analysis and scientific computing, probability theory and statistics, computational graphics, image analysis and processing, and applied geometry.
The academic program is a two-year master program (120 ECTS), fully taught in English. It combines three semesters of courses and laboratory work (90 ECTS) with a six-month individual research project (30 ECTS).
The first year is composed of a common core which provides theoretical and practical grounds in probability and statistics, PDE and modelling, images and geometry as well as computer sciences, optimisation and cryptology.

In the second year, the first semester is divided in 2 tracks :

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

- Modeling, Scientific Computing and Image analysis (MSCI)
- Data Science (DS)

The second semester is devoted to the master thesis project.

The course is labelled "Core AI" by MIAI.

Site web du master 2e année MSIAM

This course is taught by research professors (lecturers, university professors), associate professors and professionals in the field.

Compétences

- Modéliser, formaliser et résoudre mathématiquement un problème
- Résoudre des problèmes complexes en mobilisant les concepts fondamentaux et numériques des mathématiques et des mathématiques appliquées
- Analyser, valider et vérifier des données à l'aide d'outils mathématiques et numériques

Formation internationale : Formation tournée vers l'international

Dimension internationale

The training is entirely given in English and is open to an international audience.

The international relations correspondent at your university will be able to advise you.
Further information: https://international.univ-grenoble-alpes.fr/partir-a-l-international/partir-etudier-a-l-etranger-dans-le-cadre-d-un-programme-d-echanges/

Organisation

Stages

Stage : Obligatoire

Admission

Conditions d'admission

To be admitted to the program, candidates must have previously completed their undergraduate studies and been awarded a bachelor degree in Mathematics or Applied mathematics, or equivalent. MSIAM is a two-years master degree. Students can apply to 1st yearor directly to second year.

- Admission in MSIAM 1st year : anyone holding a 3rd year or bachelor degree in mathematics or applied mathematics or an equivalent degree, interested in pursuing a high level mathematical education and motivated by the applications of mathematics. The minimum requirement is to have earned at least the equivalent of 180 ECTS credits
- Admission in MSIAM 2nd year : anyone holding a first year of master (60 ECTS credits) in mathematics or applied mathematics or an equivalent degree, interested in pursuing a high level mathematical education and motivated by the applications of mathematics. The minimum requirement is to have earned at least the equivalent of 240 ECTS credits.

Important notes :

- Students from related backgrounds (physics, computer science, engineering,…) may also apply provided they possess outstanding mathematical qualifications and are highly motivated by applications
- Eligibility : only individuals who have an excellent academic record will be considered. Applications from students from traditionally underrepresented groups are particularly encouraged
- Academic standing : Fellows must maintain full-time status in the master's program, and must be engaged in full-time coursework or research during the academic year (september 1st – july 31st)

Public continuing education : You are in charge of continuing education :

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

- if you resume your studies after 2 years of interruption of studies
- or if you followed a formation under the regime formation continues one of the 2 preceding years
- or if you are an employee, job seeker, self-employed

If you do not have the diploma required to integrate the training, you can undertake a validation of personal and professional achievements (VAPP)

Candidature

Do you want to apply and register? Note that the procedure differs depending on the degree considered, the degree obtained, or the place of residence for foreign students.

Find out which procedure applies to me and apply

Droits de scolarité

Consultez les droits d'inscription

Pré-requis obligatoires

Language requirements :

- Students are required to provide evidence of Competence in English.
  English scores required MSIAM programs: TOEFL IBT 78, CBT 210, Paper 547 / TOEIC 700 / Cambridge FCE / IELTS 6.0 min.
  This is equivalent to CEFR level B2.

  If you have successfully completed a degree (or equivalent) course at a University in one of the following countries then you meet the English requirement automatically: Australia, Canada, Guyana, Ireland, New Zealand, South Africa, United Kingdom, United States of America, West Indies.
- An A2 level in French is recommended

Infos pratiques

Contacts

Responsables pédagogiques

Sylvain Meignen

Sylvain.Meignen@grenoble-inp.fr

Responsables pédagogiques

Sana Louhichi

sana.louhichi@univ-grenoble-alpes.fr

Responsables pédagogiques

Christophe Picard

christophe.picard@imag.fr

Responsables pédagogiques

Martin SCHREIBER

martin.schreiber@univ-grenoble-alpes.fr

Secrétariat de scolarité

Natacha Blavoyer

natacha.blavoyer@grenoble-inp.fr

Secrétariat de scolarité

Téa SOCQUET-JUGLARD

tea.socquet-juglard@univ-grenoble-alpes.fr

Autre(s) structure(s) partenaire(s)

Multidisciplinary Institute in Artificial intelligence

https://miai.univ-grenoble-alpes.fr/education/ai-certifications-in-grenoble/core-ai/

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

Lieu(x) ville

Grenoble

Campus

Grenoble - Domaine universitaire

En savoir plus

MSIAM Website

https://msiam.imag.fr/

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

Programme

Master applied mathematics 1re année

Semestre 7

	Nature	CM	TD	TP	Crédits
UE Object-oriented and software design	UE			18h	3 crédits
UE Partial differential equations and numerical methods	UE	16,5h	16,5h		6 crédits
Partial differential equations and numerical methods	MATIERE	16,5h	16,5h		
Partial differential equations and numerical methods Complementary	MATIERE			16,5h	
UE Signal and image processing	UE			16,5h	6 crédits
UE Geometric Modelling	UE			16,5h	6 crédits
UE English	UE		18h		3 crédits
UE Applied probability and statistics	UE	22,5h	18h	9h	6 crédits
UE Systèmes dynamiques	UE	12h	9h	3h	3 crédits
UE Instabilities and Turbulences	UE				3 crédits
UE Turbulence	UE	12h	15h	3h	3 crédits

Semestre 8

	Nature	CM	TD	TP	Crédits
UE Computing science for big data and HPC	UE			16,5h	6 crédits
HPC	MATIERE			9h	
Introduction to database	MATIERE			7,5h	
UE Project	UE				3 crédits
UE Internship	UE				3 crédits
UE Numerical optimisation	UE			16,5h	6 crédits
UE Operations Research (MG et AM)	UE	16,5h	33h		6 crédits
UE Operations Research	UE	16,5h	16,5h		3 crédits
Operations Research Complementary	MATIERE		16,5h		
UE Introduction to cryptology (AM)	UE				6 crédits
UE Introduction to cryptology	UE	16,5h	13,5h	3h	3 crédits
UE Algebraic Algorithms for Cryptology	UE				3 crédits
UE 3D Graphics (AM)	UE	16,5h	16,5h	16,5h	6 crédits
UE 3D Graphics	UE	16,5h	16,5h		3 crédits
3D Graphics Complementary	MATIERE			16,5h	3 crédits

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

UE Turbulences	UE	30h	3h	24h	6 crédits
Plasmas Astrophysiques et Fusion	MATIERE	24h	3h		
Experimental techniques in fluid mechanics	MATIERE	6h		24h	
UE Statistical learning and applications	UE	16,5h	7,5h	25,5h	6 crédits
Statistical learning and applications	MATIERE	16,5h		16,5h	3 crédits
Statistical learning and applications complementary	MATIERE		7,5h	9h	3 crédits
UE Variational methods applied to modelling	UE	16,5h	16,5h	16,5h	6 crédits
Variational methods applied to modelling	MATIERE	16,5h	16,5h		
Variational methods applied to modelling complementary	MATIERE			16,5h	

Master applied mathematics 1ere année parcours Graduate School

Semester 7

	Nature	CM	TD	TP	Crédits
UE Object-oriented and software design	UE			18h	3 crédits
UE Partial differential equations and numerical methods	UE	16,5h	16,5h		6 crédits
Partial differential equations and numerical methods	MATIERE	16,5h	16,5h		
Partial differential equations and numerical methods Complementary	MATIERE			16,5h	
UE Signal and image processing	UE			16,5h	6 crédits
UE Geometric Modelling	UE			16,5h	6 crédits
UE Applied probability and statistics	UE	22,5h	18h	9h	6 crédits
UE English	UE		18h		3 crédits

Semester 8

	Nature	CM	TD	TP	Crédits
UE Computing science for big data and HPC	UE			16,5h	6 crédits
HPC	MATIERE			9h	
Introduction to database	MATIERE			7,5h	
UE Project	UE				3 crédits
UE Numerical optimisation	UE			16,5h	6 crédits
UE GS_MSTIC_Démarche Scientifique	UE				6 crédits
UE Introduction to cryptology (AM)	UE				6 crédits
UE Introduction to cryptology	UE	16,5h	13,5h	3h	3 crédits
UE Algebraic Algorithms for Cryptology	UE				3 crédits
UE Operations Research (MG et AM)	UE	16,5h	33h		6 crédits
UE Operations Research	UE	16,5h	16,5h		3 crédits
Operations Research Complementary	MATIERE		16,5h		

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

UE 3D Graphics (AM)	UE	16,5h	16,5h	16,5h	6 crédits
UE 3D Graphics	UE	16,5h	16,5h		3 crédits
3D Graphics Complementary	MATIERE			16,5h	3 crédits
UE Turbulences	UE	30h	3h	24h	6 crédits
Plasmas Astrophysiques et Fusion	MATIERE	24h	3h		
Experimental techniques in fluid mechanics	MATIERE	6h		24h	
UE Statistical learning and applications	UE	16,5h	7,5h	25,5h	6 crédits
Statistical learning and applications	MATIERE	16,5h		16,5h	3 crédits
Statistical learning and applications complementary	MATIERE		7,5h	9h	3 crédits
UE Variational methods applied to modelling	UE	16,5h	16,5h	16,5h	6 crédits
Variational methods applied to modelling	MATIERE	16,5h	16,5h		
Variational methods applied to modelling complementary	MATIERE			16,5h	

Master MSIAM parcours classique 2e année

Semestre 9

	Nature	CM	TD	TP	Crédits
UE Software development tools and methods	UE	9h		30h	3 crédits
UE Modeling seminar and projects	UE		36h	24h	6 crédits
UE Geophysical imaging	UE	18h			3 crédits
UE An introduction to shape and topology optimization	UE	18h			3 crédits
UE Refresh courses	UE	6h	6h	6h	0 crédits
UE GPU Computing	UE	18h		18h	6 crédits
UE Differential Calculus, Wavelets and Applications	UE	36h			6 crédits
UE Optimal transport: theory, applications and related numerical methods	UE	36h			6 crédits
UE Fluid Mechanics and Granular Materials	UE	36h			6 crédits
UE Handling uncertainties in (large-scale) numerical models	UE	36h			6 crédits
UE Temporal, spatial and extreme event analysis	UE	36h			6 crédits
UE Advanced Machine Learning: Applications to Vision, Audio and Text	UE	36h			6 crédits
UE Natural Language Processing & Information Retrieval	UE	36h			6 crédits
UE From Basic Machine Learning models to Advanced Kernel Learning	UE	36h			6 crédits
UE Mathematical Foundations of Machine Learning	UE	36h			6 crédits
UE Statistical learning: from parametric to nonparametric models	UE	36h			6 crédits
UE Learning, Probabilities and Causality	UE	36h		18h	6 crédits
UE Mathematical optimization	UE	36h			6 crédits

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

UE Data science seminars and Challenge	UE		36h		6 crédits
UE Computational biology	UE	36h			6 crédits
UE Quantum Information & Dynamics	UE	36h			6 crédits
UE Numerical Mechanics	UE				6 crédits

Semestre 10

	Nature	CM	TD	TP	Crédits
UE Research projects	UE				30 crédits

Master 2e année parcours Graduate School

Semestre 9

	Nature	CM	TD	TP	Crédits
UE GS_MSTIC_Ethique de la recherche	UE				6 crédits
UE Software development tools and methods	UE	9h		30h	3 crédits
UE Modeling seminar and projects	UE		36h	24h	6 crédits
UE Geophysical imaging	UE	18h			3 crédits
UE An introduction to shape and topology optimization	UE	18h			3 crédits
UE Refresh courses	UE	6h	6h	6h	0 crédits
UE GPU Computing	UE	18h		18h	6 crédits
UE Differential Calculus, Wavelets and Applications	UE	36h			6 crédits
UE Fluid Mechanics and Granular Materials	UE	36h			6 crédits
UE Handling uncertainties in (large-scale) numerical models	UE	36h			6 crédits
UE Temporal, spatial and extreme event analysis	UE	36h			6 crédits
UE Advanced Machine Learning: Applications to Vision, Audio and Text	UE	36h			6 crédits
UE Natural Language Processing & Information Retrieval	UE	36h			6 crédits
UE From Basic Machine Learning models to Advanced Kernel Learning	UE	36h			6 crédits
UE Mathematical Foundations of Machine Learning	UE	36h			6 crédits
UE Statistical learning: from parametric to nonparametric models	UE	36h			6 crédits
UE Learning, Probabilities and Causality	UE	36h		18h	6 crédits
UE Mathematical optimization	UE	36h			6 crédits
UE Data science seminars and Challenge	UE		36h		6 crédits

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026

Notre offre de formation évolue ! Les programmes pour l'année 2027-2028 sont en cours de mise à jour et peuvent évoluer jusqu'au 28 novembre 2026. Les programmes de l'année universitaire 2026-2027 restent consultables en cas de besoin.

UE Computational biology	UE	36h			6 crédits
UE Quantum Information & Dynamics	UE	36h			6 crédits
UE Numerical Mechanics	UE				6 crédits
UE Advanced numerical methods for PDEs and optimal transport problems	UE	36h			6 crédits

Semestre 10

	Nature	CM	TD	TP	Crédits
UE Research projects	UE				30 crédits

Informations non contractuelles.
Dernière mise à jour le 12 novembre 2026