Université de Strasbourg

MASTER - Sciences de la Terre et des planètes, environnement

Geosciences (UFAZ)

Langue du parcours			Anglais
ECTS			120 ECTS
Volume horaire			
TP : 0h	TD : 160h	CI : 216h	CM : 254h
Formation initiale			Oui
Formation continue			Non
Apprentissage			Non
Contrat de professionnalisation			Non
Stage : (durée en semaines)			18

Pré-requis obligatoires

We are looking for students with a strong work-ethic, who are able to learn complex information quickly and use their knowledge to solve previously unseen problems. The ideal applicant will have bachelor level training in :

- Physics (continuum mechanics, fluid mechanics, wave propagation in elastic media, electromagnetic phenomena, potential fields);
- Geology (stratigraphy, plate tectonics, mineralogy, petrology, sedimentology);
- Chemistry (architecture and transformation of matter, chemical equilibria, the thermodynamics of chemical reactions).

Previous experience in laboratory experiments, geological and geophysical field-work, and computer programming in Python will be an advantage.

Objectifs du parcours

Ce parcours est proposé exclusivement dans le cadre de l'Université franco-azerbaïdjanaise (UFAZ).

This two-year graduate program, proposed exclusively in the context of the French-Azerbaidjani University (UFAZ), specialises in Geosciences with an emphasis modelling of physical and chemical processes within the Earth. It is piloted by Ecole et Observatoire des Sciences de la Terre in Strasbourg, France, in collaboration with the University of Rennes-1.

The program combines training in advanced aspects of Geology, Geophysics, and Geochemistry requiring a strong background in Mathematics, Physics, and Computer Programming. This training is provided by seasoned Professors and Assistant Professors from Strasbourg and Rennes-1 Universities and supplemented by specialist courses by professionals and experts.

Compétences à acquérir

We place a strong emphasis on analytical reasoning in all our courses, initiate students to finite element modeling of Earth science processes, and give them hands-on experience with geophysical and geological fieldwork and their corresponding data processing and analysis methods.

As no field in the Geosciences can be understood alone, we guide students to integrate all the knowledge and skills they acquire and apply them to analyze and solve practical Geoscience problems in a project-oriented framework. Our aim is to train well-rounded Geoscientists and Geophysicists with strong analytical, numerical, and problem-solving skills.

What are the skills of an UFAZ Geoscience Master's graduate?

- They possess a strong theoretical, numerical, and practical background in the Geosciences (Geophysics, Geology, and Geochemistry).
- They possess the geoscience and physics insights and the mathematical skills required to deepen this background in any geoscience speciality, either through in-house industry training, further academic training, or self-learning.
- They can apply this knowledge and these skills to solving new geoscience problems, pulling together insights from different fields if necessary.
- They can communicate effectively in English (and also in French for some students), allowing worldwide geographic mobility.
- They can work effectively in teams within a multi-cultural environment.

Poursuite d'études

We expect two-thirds of our students to apply for management or research& development positions in energy companies, geophysical / geotechnical service companies, or other companies for whom a good understanding of Earth structure and processes is central.

We expect the remaining third of students to pursue their education with a doctoral program in Azerbaidjan or abroad.

Stage et projet tutoré

The internship period in a company is 18 weeks, from February to June.
This internship shall be drawn up the writing of a report and an end-of-training defense.

Enseignements délocalisés

All teaching will take place in Baku (Azerbaidjan). The internship that makes up the last semester may be done in any country.

Contacts

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M1 Geosciences (UFAZ)

M1S1 - Geosciences (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Geology and georesources 1	12 ECTS	77 h		19 h			
Geology of the world		24 h					
Regional geological framework		24 h					
Reservoir modelling 1		14 h		10 h			
Mineral resources 1		15 h		9 h			
Transversal tools	6 ECTS	20.5 h		16.5 h	29 h		
Geographical information systems		4 h			20 h		
Applied programming in Python		12 h		9 h	9 h		
Writing in the sciences		4.5 h		7.5 h			
Data analysis and modeling 1	12 ECTS	34 h	24 h	38 h			
Signal processing		10 h		14 h			
Inverse methods		10 h		14 h			
Potential field methods		14 h		10 h			
Seismic methods			24 h				

M1S2 - Geosciences (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Geology and georesources 2	9 ECTS	30 h		26 h			
Seismic stratigraphy, well log analysis		14 h		10 h			
Reservoir modelling 2		14 h		10 h			
Research Project		2 h		6 h			
Hydrosystems	9 ECTS	47.5 h		24.5 h			
Hydrological modeling 1		14 h		10 h			
Environmental geosciences		19.5 h		4.5 h			
Geochemical modeling 1		14 h		10 h			
Data analysis and modeling 2	12 ECTS		72 h	6 h	18 h		
Finite elements			48 h				
Geophysical fieldwork				6 h	18 h		
Geophysical modelling 1			24 h				

M2 Geosciences (UFAZ)

M2S3 - Geosciences (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Fluid and mineral resources	12 ECTS	31 h	48 h	17 h			
Hydrological modeling 2			24 h				
Geochemical modeling 2			24 h				
Reservoir modelling 3		16 h		8 h			
Mineral resources 2		15 h		9 h			
Geological structures characterization	9 ECTS		48 h		24 h		
Geological case studies			24 h				
Geological fieldwork					24 h		
Large scale seismic imaging			24 h				
Data analysis and modeling 3	9 ECTS	12 h	48 h	12 h			
Satellite data and applications		12 h		12 h			
Geoscience software			24 h				
Machine learning in the geosciences			24 h				

M2S4 - Geosciences (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Internship	30 ECTS						16 sem
Research or industry Internship							16 sem