LICENCE - Sciences de la Terre

Geophysical engineering (UFAZ)

Langue du parcours			Anglais
ECTS			180 ECTS
Volume horaire			
TP : 0h	TD : 0h	CI : 0h	CM : 0h
Formation initiale			Oui
Formation continue			Non
Apprentissage			Non
Contrat de professionnalisation			Non
Stage : (durée en semaines)			12

Pré-requis obligatoires

Pre-requesites for students of this speciality:

- Having strong skills in maths and physics;
- Having strong language skills (specifically in English);
- Being hard-working;
- Being dedicated;
- Being adaptable.

Objectifs du parcours

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

This three-year undergraduate program, proposed exclusively in the context of the French-Azerbaidjani University (UFAZ), specialises in Geosciences with an emphasis on Geophysics. It is piloted by Ecole et Observatoire des Sciences de la Terre in Strasbourg, France, which runs the country's top Geophysics engineering school catering to carbon-based and geothermal energy companies and their service companies as well as to companies specializing in geotechnical and hydrological problems.

The program combines training in the fundamental aspects of Plate Tectonics, Geology, Geophysics, and Geochemistry with a strong background in Mathematics, Physics, and Computer Programming. This training is provided by seasoned Professors and Assistant Professors from Strasbourg University and supplemented by specialist courses by professionals and experts.

Compétences à acquérir

We place a strong emphasis on practical work in all our courses, initiate students to working in both the laboratory and the field, and give them hands-on experience with geophysical exploration methods (seismic methods, gravimetry and magnetic surveys, electro-magnetic surveys) 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 and problem-solving skills.
What are the skills of an UFAZ Geoscience / Geophysics Bachelor's graduate?

- They possess a strong theoretical 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 half of our students to apply to energy companies and their geophysical / geotechnical service companies for entry-level positions in data acquisition, data processing, and data interpretation. We expect the other half to pursue their education with a Master's or advanced engineering degree abroad, then apply for higher-level positions in research and development, management, as well as in more technical fields.

Stage et projet tutoré

The internship period in a company is 12 weeks, from March to May.
This internship shall be drawn up the writing of a report and an end-of-training defense.

Enseignements délocalisés

All teaching takes place in Baku, Azerbaidjan.

Contact

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L0 GE

L0 - 1st semester

	ECTS	CM	CI	TD	TP	TE	Stage
Basic Mathematics 1	6 ECTS	1.5 h	42 h	4.5 h		63 h	
Basic Maths 1			42 h			63 h	
Working Methodology - Basic Maths 1		1.5 h		4.5 h			
Basic Physics 1	6 ECTS	3 h	39 h	3 h		63 h	
Basic Physics 1			39 h			63 h	
Working methodology - Basic Physics 1		3 h		3 h			
Basic Chemistry 1	6 ECTS	3 h	42 h	3 h		63 h	
Basic Chemistry 1			42 h			63 h	
Working methodology - Basic Chemistry 1		3 h		3 h			
Introduction to Computer Science 1	6 ECTS		33 h	6 h	21 h	90 h	
System, Algorithms and Programming 1			33 h		21 h	90 h	
Working methodology - Intro to Computer Sciences 1				6 h			
Languages 01	6 ECTS			60 h			
English or French				60 h		168 h	

L0 - 2nd semester

	ECTS	CM	CI	TD	TP	TE	Stage
Basic Mathematics 2	7 ECTS	20 h		60 h			
Algebra, Probability, Statistics		10 h		30 h			
Analysis		10 h		30 h			
Basic Physics 2	6 ECTS	13.5 h	25.5 h		21 h	94.5 h	
Basic Physics 2		13.5 h	25.5 h		21 h	94.5 h	
Basic Chemistry 2	6 ECTS	13.5 h	27 h		21 h	94.5 h	
Basic Chemistry 2		13.5 h	27 h		21 h	94.5 h	
Introduction to Computer Sciences 2	6 ECTS		15 h	24 h	21 h	90 h	
Systems, algorithms, programming 2			15 h	24 h	21 h	90 h	
Basic Geosciences	2 ECTS	13.5 h		7.5 h	3 h	27 h	
Introduction to Geosciences		12 h		3 h	3 h	27 h	
Working methodology		1.5 h		4.5 h			
Languages 02	3 ECTS			30 h			
English or French				30 h		63 h	

L1 GE (UFAZ)

L1S1 - Geophysical engineering (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Mathematics 1	6 ECTS	28 h		28 h			
Mathematics		28 h		28 h			
Physics 1	8 ECTS	42 h		42 h		126 h	
Point mechanics		12 h		12 h			
Fluid mechanics		6 h		6 h		54 h	
Thermodynamics 1		12 h		12 h		36 h	
Electrostatics		12 h		12 h		36 h	
Chemistry 1	4 ECTS	24 h		24 h			
Architecture of matter 1		12 h		12 h			
Transformation of matter 1		12 h		12 h			
Computer sciences 1	3 ECTS	9 h			21 h		
Computer Sciences for Physics and Chemistry		9 h			21 h	36 h	
Geosciences 1	6 ECTS	30 h	21 h	12 h		63 h	
Internal envelopes		18 h		3 h		31.5 h	
External envelopes			21 h			31.5 h	
Introduction to Georessources		12 h		9 h			
Languages 1	3 ECTS		72 h				
English or French				30 h			

L1S2 - Geophysical engineering (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Mathematics 2	6 ECTS	28 h		28 h			
Mathematics 2		28 h		28 h			
Physics 2	6 ECTS	18 h		18 h	36 h	108 h	
Oscillators, Waves, Optics		18 h		18 h		54 h	
Physics Lab 1					36 h	54 h	
Chemistry 2	6 ECTS	30 h		30 h			
Architecture of matter 2		15 h		15 h			
Transformation of matter 2		15 h		15 h			
Geosciences 2	9 ECTS	33 h	21 h	15 h	10.5 h	63 h	
Gravimetry and isostasy			21 h			31.5 h	
Plate tectonics		12 h		9 h		31.5 h	
Mineralogy		10.5 h			6 h		
Petrology		10.5 h		6 h	4.5 h		
Languages 2	3 ECTS			30 h			
English or French				30 h			

L2 GE (UFAZ)

L2S3 - Geophysical engineering (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Mathematics 3	5 ECTS	20 h		34 h			
Mathematics 3		20 h		34 h			
Physics 3	8 ECTS	42 h		42 h			
Electromagnetism		18 h		18 h		72 h	
Thermodynamics 2		12 h		12 h			
Solid mechanics GGG		12 h		12 h		72 h	
Geology 1a	7 ECTS	36 h		12 h	21 h		
Sedimentology		12 h			9 h		
Depositional environments		12 h		6 h	4.5 h		
Cartography and GIS		12 h			12 h		
Geology 1b	7 ECTS	49.5 h		15 h	4.5 h		
Structural geology		12 h		9 h			
Basin analysis and sequence stratigraphy		19.5 h			4.5 h		
Principles of geochemistry		18 h		6 h			
Languages 3	3 ECTS			30 h			
English or French					30 h		

L2S4 - Geophysical engineering (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Mathematics 4	5 ECTS	20 h		32 h			
Mathematics 4		20 h		32 h			
Physics 4	7 ECTS	24 h		30 h	24 h	72 h	
Fluid mechanics 2		12 h		18 h			
Electronics		12 h		12 h		36 h	
Physics Lab 2					24 h	36 h	
Geology 2	3 ECTS	1.5 h		6 h	30 h	45 h	
Geology fieldwork		1.5 h		6 h	30 h	45 h	
Geophysics 1	6 ECTS	18 h	54 h	6 h		31.5 h	
Signal processing			30 h			36 h	
Seismology and seismics			24 h				
Well characterization and logging		18 h		6 h			
Languages 4	3 ECTS			30 h			
English or French				30 h			
Professional preparation 1	3 ECTS			30 h			
Soft skills				30 h			
Student-led project	3 ECTS		6 h	12 h		105 h	
Student-led project			6 h	12 h		105 h	

L3 GE (UFAZ)

L3S5 - Geophysical engineering (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Mathematics 5	2 ECTS		30 h				
Linear algebra, Fourier transforms and probability			30 h				
Physics 5	6 ECTS	36 h		36 h	9 h	144 h	
Fluid mechanics in soils		12 h		12 h	9 h	72 h	
Electromagnetism		18 h		18 h			
Geology 3	7 ECTS	3 h	27 h	12 h	24 h	63 h	
Cartography, field work and data analysis		3 h	6 h	12 h	24 h	63 h	
Applied geochemistry			21 h			31.5 h	
Geophysics 3	6 ECTS	3 h	21 h	6 h	30 h	85.5 h	
Electromagnetic exploration methods			21 h			31.5 h	
Geophysics fieldwork		3 h		6 h	30 h	54 h	
Petroleum geology	5 ECTS	27 h			21 h		
Geophysics and petroleum geology		21 h			9 h	45 h	
Initiation to PETREL		6 h			12 h		
Humanities 4	4 ECTS	25.5 h	1.5 h	12 h			
Preparation of internship		4.5 h	1.5 h	12 h			
Management		21 h					

L3S6 - Geophysical engineering (UFAZ)

	ECTS	CM	CI	TD	TP	TE	Stage
Geosciences 3	12 ECTS	48 h	6 h	54 h			
Student-led project			6 h	54 h			
Seismic acquisition and processing		24 h					
Geology of Azerbaidjan		24 h					
Humanities 5	3 ECTS		26 h		12 h		
Marketing for Engineers, Scientists & Technologist			26 h		12 h		
BSc internship	15 ECTS			150 h			
Internship				150 h			