École et observatoire des **sciences de la Terre** Université de Strasbourg

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Information for incoming exchange students

Courses offered in English

2018 / 2019

Code	Name of the course	Name of the course (French)	ECTS	Level	Detail	Term
LD20GM01	Bibliography & Advanced English in Geosciences S1	Bibliography & Advanced English in Geosciences S1	3	M1-S1	MC	AT
OT2EGMDC	Dynamics of the water cycle in a river catchment	Dynamique du cycle de l'eau dans un bassin versant	3	M1-S1	EG	AT
OT2DGMHG	General hydrogeology	Hydrogéologie générale	3	M1-S1	GE	AT
OT2DGMTG	Geochemical and isotopic tracing 1	Traçage géochimique et isotopique 1	3	M1-S1	MC	AT
OT2DGMGG	Geochronology and geothermometers	Géochronologie et géothermomètres	3	M1-S1	GE	AT
OT012MMG	Geophysics Laboratory	Mesure géophysique en labo	3	M1-S1	E	AT
OT2DGMIA	IT / Data analysis	Informatique / Analyse de données	3	M1-S1	MC	AT
OT2DGMMR	Mechanics and rheology of the lithosphere	Mécanique et rhéologie de la lithosphère	3	M1-S1	GE	AT
OT2DGMMM	Methods, measurements and geophysical prospecting 1	Méthodes, mesures et prospection géophysique 1	3	M1-S1	MC	AT
OT2EGMMM	Microbial metabolic diversity (In English)	Microbial metabolic diversity (en anglais)	3	M1-S1	EG	AT
OT2DGMPT	Petrophysics 1	Pétrophysique 1	3	M1-S1	PE - GE	AT
OT2FHMPE	Petrophysics 2 - microstructural brittle	Pétrophysique 2 - microstructurale cassante	3	M1-S1	PE	ST
OT2FGMGP	Physical geodesy and orbitography	Géodésie physique et orbitographie	4	M1-S1	PE - E	AT
OT012MPR	Rock Physics	Physique des roches	4	M1-S1	E	AT
OT012MBS	Sedimentary Basins	Bassins sédimentaires	4	M1-S1	E	AT
OT012MMS	Seismic Modelling	Modélisation sismique	4	M1-S1	E	AT
OT2FGMSM	Seismology: Earth Models	Sismologie - modèles de Terre	4	M1-S1	PE - E	AT
OT012MTS	Signal processing	Traitement du signal	4	M1-S1	PE - E	AT
OT2EGMCP	Soil properties and geotechnics	Caractérisation pédologique et géotechnique des sols	3	M1-S1	EG	AT
OT2DGMTB	Tectonics of sedimentary basins 1	Tectonique des bassins sédimentaires 1	3	M1-S1	MC	AT
OT2DHMAB	Basin Analysis	Analyse des bassins	3	M1-S2	GE	ST
OT012MBS	Basin dynamics	Dynamique des bassins	4	M1-S2	E	ST
OT2DHMPB	Bibliographic preparation for the research project (compulsory for the specialisation STPE)	Préparation biblio au projet de recherche	3	M1-S2	MC	ST
OT012MSD	Field Trip Geophysical Logging	Stage de diagraphie	2	M1-S2	E	ST
OT2DHMST	Field trip sedimentary basins (Alpes)	Stage terrain bassins sédimentaires (Alpes)	3	M1-S2	GE	ST
OT2EHMTG	Geochemical and isotopic tracing 2	Traçage géochimique et isotopique 2	3	M1-S2	EG	ST
OT2DHMSI	Geographical information systems (GIS)	Systèmes d'informations géographiques (SIG)	3	M1-S2	MC	ST
OT2FHMGE	Geomagnetism	Géomagnétisme	4	M1-S2	PE - E	ST
OT012MGM	Geomechanics	Géomécanique	2	M1-S2	E	ST
OT012MPG	Geophysics Project (semester 7 and 8)	Projet de géophysique (semestres 7 et 8)	3	M1-S2	E	ST
OT012MGC	Hydrogeochemistry	Géochimie	4	M1-S2	E	ST
OT2EHMHY	Hydrogeochemistry: thermodynamic foundations and modeling	Hydrogéochimie : fondements thermodynamiques et modélisation	3	M1-S2	EG	ST
OT2DGMHG	Hydrogeology	Hydrogéologie	4	M1-S2	E	ST
OT2FHMME	Inverse methods	Méthodes inverses	4	M1-S2	PE - E	ST
OT2DHMPM	Metamorphic petrology and modeling	Pétrologie magmatique et modélisation	3	M1-S2	GE	ST
OT2MMG	Methods and geophysical prospecting 2	Méthodes et prospection géophysique 2	3	M1-S2	PE	ST
OT2DHMMC	Microstructural analysis (brittle)	Microstructurale (cassant)	3	M1-S2	GE	ST
OT2DHMMD	Microstructural analysis (ductile)	Microstructurale (ductile)	3	M1-S2	GE	ST
OT2FHMMP	Potential and electromagnetic methods	Méthodes potentielles et électromagnétiques	4	M1-S2	PE - E	ST
OT012MMP	Potential Methods	Méthodes potentielles	4	M1-S2	E	ST

Code	Name of the course	Name of the course (French)	ECTS	Level	Detail	Term
OT2DHMPR	Project : initiation to research	Projet d'initiation à la recherche	3	M1-S2	MC	ST
OT2EHMQM	Quality of measurements and handling of errors	Qualité des mesures et traitement d'erreurs	3	M1-S2	EG	ST
OT2FKMIS	Seismic imaging	Imagerie sismique	4	M1-S2	PE - E	ST
OT2FHMST	Seismology – Earthquakes	Sismologie - Tremblements de Terre	4	M1-S2	PE - E	ST
OT2FHMGS	Spatial geodesy	Géodésie spatiale	3	M1-S2	PE	ST
OT2DHMTB	Tectonics of sedimentary basins 2	Tectonique des bassins sédimentaires 2	3	M1-S2	GE	ST
OT2EHMSE	measurements	Sols et eaux : prélèvements et mesures	3	M1-S2	EG	ST
OT2DHMTG	Watershed processes	Processus des bassins versant	3	M1-S2	GE	ST
OT2DKMDA	Active deformation and geodesy	Déformation active et géodésie	3	M2-S2	GE-PE	AT
OT2DKMTA	Active tectonics and paleoseismology	Tectonique active et paléo-sismologie	3	M2-S2	GE-PE	AT
LD20KM01	Advanced English in Geosciences - S3	Advanced English in Geosciences S3	3	M2-S2	MC	AT
OT2EKMSI	Advanced GIS	SIG avancé	3	M2-S2	EG	AT
OT2EKMTC	Contaminant transportation in hydrosystems	Transfert des contaminants dans les hydrosystèmes	6	M2-S2	EG	AT
OT013MME	Electromagnetic methods	Méthodes éléctromagnétiques	2	M2-S2	E	AT
OT2DKMST	Field trip petrology, structural geology (Bohemian massif, Czech Republic)	Stage terrain pétrologie, géologie structurale (massif de Bohème, République Tchèque)	3	M2-S2	GE	AT
OT2FKMSG	Field works geophysics	Stage terrain géophysique	6	M2-S2	PE	AT
OT000GMT	Geophysics field camp	Stage de géophysique de terrain	4	M2-S2	E	AT
OT2FKMGEOT2	Geothermics	Géothermie	3	M2-S2	PE - E	AT
OT2FKMGR	Gravimetry	Gravimétrie	3	M2-S2	PE	AT
OT013MHY	Hydrogeophysics	Hydrogéophysique	2	M2-S2	E	AT
OT2DKMAM	Magmatic and metamorphic approaches applied to geodynamics	Approches magmatiques et métamorphiques appliquées à la géodynamique	3	M2-S2	GE	AT
OT2DKMON	Modeling tools for water resources, rock physics and advanced GIS	Outils de modélisation pour la ressource en eau, physique des roches et SIG avancé	3	M2-S2	GE	AT
OT2EKMOM	Modelling Tools for Water Resource Management	Outils de modélisation pour la gestion de la ressource en eau	3	M2-S1	EG	AT
OT2DKMNE	Nanoparticles and environment	Nanoparticules et environnement	3	M2-S1	EG	AT
OT2FKMRN	Natural hazards	Risques naturels	3	M2-S1	PE	AT
OT013MNM	Digital tools and methods	Méthodes et outils numériques	2	M2-S1	E	AT
OT2DKMSO	Orogenic systems	Systèmes orogéniques	3	M2-S1	GE	AT
OT2BKMSP	Petroleum geology	Géologie pétrolière	2	M2-S1	E	AT
OT013MMP	Potential Methods 2	Méthodes potentielles 2	2	M2-S1	E	AT
OT2FKMPR	Rock physics applied to reservoirs	Physique des roches – réservoirs	3	M2-S1	PE - E	AT
OT2FKMIS	Seismic imaging of heterogeneities	Imagerie sismique des hétérogénéités	3	M2-S1	PE - E	AT
OT013MTI	Seismic processing and inversion	Traitement et inversion sismique	2	M2-S1	E	AT
OT013MRS	Seismic Risk	Risque sismique	2	M2-S1	E	AT
OT2FKMST	Seismology - structure of the Earth	Sismologie - structure de la Terre	3	M2-S1	PE	AT
OT2FKMSP	Sismologie - source physics	Sismologie - physique de la source	3	M2-S1	PE	AT
OT013MSO	Soils, multi-phase flow and complex transfers	Sols, transferts multi-phases et complexes	2	M2-S1	E	AT
OT2DKMTE	Tectonics, erosion, climate	Tectonique, érosion, clima	3	M2-S1	GE	AT

All courses on the list are guaranteed in English for incoming students

M-S: Master level year - semester

Click here for the module descriptions of the Master's Programme

MC : Compulsory module for all Master students

GE: Master in Earth Sciences, Planets, Environment - Specialisation Geology and Dynamics of the Earth

PE: Master in Earth Sciences, Planets, Environment - Specialisation Physics of the Earth

EG: Master in Earth Sciences, Planets, Environment - Specialisation Engineering and Geosciences for the Environment (ISIE)

E: Engineering Degree Course in Geophysics

Click here for the module descriptions of the Engineering Degree Course

AT: Automn term (September - January)

SP: Spring term (January - May)

Last update: 29/11/2018 ND

Master in Earth Sciences, Planets, Environment - Specialisation Engineering and Geosciences for the Environment (ISIE)

120 ECTS

M1 Semester 1 - Autumn

15 compulsory credits

Bibliography & Advanced English in Geosciences	3 ECTS
IT / Data analysis	3 ECTS
Tectonics of sedimentary basins 1	3 ECTS
Geochemical and isotopic tracing 1	3 ECTS
Methods, measurements and geophysical prospecting 1	3 ECTS

15 elective credits

General hydrogeology	3 ECTS
Dynamics of the water cycle in a river catchment	3 ECTS
Environmental pollutants	3 ECTS
Soil properties and geotechnics	3 ECTS
Evaluation of environmental impacts (Life cycle analysis)	3 ECTS
Field trip sedimentology (Normandie)	3 ECTS
Microbial metabolic diversity (In English)	3 ECTS
Introduction to environmental law	3 ECTS
Additional electives	3 ECTS

M1 Semester 2 - Spring

6 ompulsory credits

Project : initiation to research	3 ECTS
Geographical information systems (GIS)	3 ECTS

24 elective credits

Quantitative hydrogeology, transfer into groundwater	3 ECTS
Quantitative hydrogeology - geochemical and isotopic tracing 2	3 ECTS
Water / soil / plant transfers	3 ECTS
Water and soil: sampling and measurements	3 ECTS
Environmental management standards	3 ECTS
Hydrogeochemistry: thermodynamic foundations and modeling	3 ECTS
Quality of measurements and handling of errors	3 ECTS
Environmental economics	3 ECTS
Methods of studying populations and ecosystems	3 ECTS
Environmental and applied microbiology	3 ECTS
Additional electives	3 ECTS

M2 Semester 1 - Autumn

6 compulsory credits

Advanced English in Geosciences	3 ECTS
Industrial property, subsurface rights and energy economics	3 ECTS

24 elective credits

Modelling Tools for Water Resource Management	3 ECTS
Contaminant transportation in hydrosystems	6 ECTS
Ecological engineering	3 ECTS
Modeling of hydrodynamic coupling and reactive transfers: application to extensive wastewater treatment hydrodynamic coupling systems	3 ECTS
Diagnosis and soil remediation techniques	6 ECTS
Advanced GIS	3 ECTS
Nanoparticles and environment	3 ECTS
Territorial risk management	3 ECTS
Analysis of the atmosphere and atmospheric pollution	6 ECTS
Additional electives	3 ECTS

M2 Semester 2 - Spring

Master Thesis / Internship
(company or laboratory)

30 ECTS

Commun core units

Electives specialisation in Engineering and Geosciences for the Environment (ISIE)

Guaranteed in English
for incoming students

École et observatoire des sciences de la Terre
Université de Strasbourg

EOST - 5 rue René Descartes
F-67084 Strasbourg Cedex
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Last update 16/11/2018

Master in Earth Sciences, Planets, Environment - Specialisation in Geology and Dynamics of the Earth

120 ECTS

M1 Semester 1 - Autumn

15 compulsory credits

Bibliography & Advanced English in Geosciences	3 ECTS
IT / Data analysis	3 ECTS
Tectonics of sedimentary basins 1	3 ECTS
Geochemical and isotopic tracing 1	3 ECTS
Methods, measurements and geophysical prospecting 1	3 ECTS

15 elective credits

Mechanics and rheology of the lithosphere	3 ECTS
Field trip sedimentology (Normandie)	3 ECTS
Petroleum systems	3 ECTS
Metamorphic petrology and modeling	3 ECTS
Geochronology and geothermometers	3 ECTS
Petrophysics 1	3 ECTS
General hydrogeology	3 ECTS
Additional electives	3 ECTS

M1 Semester 2 - Spring

9 ompulsory credits

Project : initiation to research	3 ECTS
Bibliographic preparation for the research project (compulsory for the specialisation STPE)	3 ECTS
Geographical information systems (GIS)	3 ECTS

24 elective credits

Microstructural analysis (ductile)	3 ECTS
Microstructural analysis (brittle)	3 ECTS
Tectonics of sedimentary basins 2	3 ECTS
Basin Analysis	3 ECTS
Field trip sedimentary basins (Alpes)	3 ECTS
Practical sedimentology	3 ECTS
Metamorphic petrology and modeling	3 ECTS
Geochemical tracing, quantitative hydrogeology and watershed processes	3 ECTS
Additional electives	3 ECTS

M2 Semester 1 - Autumn

6 compulsory credits

Advanced English in Geosciences	3 ECTS
Industrial property, subsurface rights and energy economics	3 ECTS

24 elective credits

Field trip petrology, structural geology (Bohemian massif, Czech Republic)	3 ECTS
Orogenic systems	3 ECTS
Active tectonics	3 ECTS
Active deformation and geodesy	3 ECTS
Petroleum systems 2	3 ECTS
Tectonics, erosion, climate	3 ECTS
Facies and sedimentology	3 ECTS
Magmatic and metamorphic approaches applied to geodynamics	3 ECTS
Modeling tools for water resources, rock physics and advanced GIS	3 ECTS
Additional electives	3 ECTS

M2 Semester 2 - Spring

Master Thesis / Internship
(company or laboratory)

30 ECTS

Commun core units
Electives specialisation in Geology and Dynamics of the Earth
Guaranteed in English for incoming students

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Master in Earth Sciences, Planets, Environment - Specialisation in Physics of the Earth

120 ECTS

M1 Semester 1 - Autumn

15 compulsory credits

Bibliography & Advanced English in Geosciences	3 ECTS
IT / Data analysis	3 ECTS
Tectonics of sedimentary basins 1	3 ECTS
Geochemical and isotopic tracing 1	3 ECTS
Methods, measurements and geophysical prospecting 1	3 ECTS

15 elective credits

Signal processing (compulsory for the specialisation in Physics of the Earth)	4 ECTS
Seismology: models of the Earth	4 ECTS
Physical geodesy and orbitography	4 ECTS
Petrophysics 1	3 ECTS
Global dynamics of the Earth and geophysical fluids	4 ECTS
Additional electives	3 ECTS

M1 Semester 2 - Spring

9 ompulsory credits

Project : initiation to research	3 ECTS
Bibliographic preparation for the research project (compulsory for the specialisation STPE)	3 ECTS
Geographical information systems (GIS)	3 ECTS

24 elective credits

Inverse methods – compulsory for the specialisation in Physics of the Earth	4 ECTS
Seismology – Earthquakes	4 ECTS
Seismic imaging	4 ECTS
Geomagnetism	4 ECTS
Potential and electromagnetic methods	4 ECTS
Petrophysics 2 - microstructural brittle	3 ECTS
Methods and geophysical prospecting 2	3 ECTS
Spatial geodesy	3 ECTS
Additional electives	3 ECTS

M2 Semester 1 - Autumn

6 compulsory credits

Advanced English in Geosciences	3 ECTS
Industrial property, subsurface rights and energy economics	3 ECTS

24 elective credits

Seismology - structure of the Earth	3 ECTS
Sismologie - source physics	3 ECTS
Seismic imaging of heterogeneities	3 ECTS
Gravimetry	3 ECTS
Rock physics applied to reservoirs	3 ECTS
Active deformation and geodesy	3 ECTS
Active tectonics and paleoseismology	3 ECTS
Natural hazards	3 ECTS
Geothermics	3 ECTS
Field works geophysics	6 ECTS
Additional electives	3 ECTS

M2 Semester 2 - Spring

Master Thesis / Internship
(company or laboratory)

30 ECTS

Commun core units
Electives specialisation in Physics of the Earth
Guaranteed in English for incoming students

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École et observatoire des **sciences de la Terre** Université de Strasbourg

Engineering Degree Course in Geophysics (Master Grade)

Module overview 2018/2019

Cti Commission des titres d'ingénieur

Semester 5 - Autumn	ECTS	Semester 6 - Spring	ECTS	Semester 7 - Autumn	ECTS	Semester 8 - Spring	ECTS	Semester 9 - Autumn	ECTS	Semester 10
Mathematics	4	Mathematics and Signal Analysis	4	Signal Processing	4	Inverse Problems	4	From Seismic Image to Geomodel	2	Final engineering project in a professional or research context
Computer Science 1: C Programming	4	Computer Science 2: Matlab	4	Numerical Analysis	4	Geophysics Project (semester 7 and 8)	3	Geophysics field camp	3	
Continuum Mechanics	4	Seismic Waves (partly taught in English)	3	Elective Courses:	12	Elective Courses:	12	Geostatistics	2	
Earth Physics	4	Fluid Mechanics and Fracturing of Rocks (partly taught in English)	3	*Seismology: Earth Models*	*4*	Seismology: Earthquakes	*4*	Geothermal Energy	2	
Potential and Electromagnetic Methods	3	Space Geodesy/GIS	3	*Physical Geodesy*	*4*	Seismic Imaging	*4*	Hydrogeophysics	2	
Tectonics	4	Earth Materials	2	*Seismic Modelling (taught in English)*	*4*	Geomagnetism	*4*	Validation Internship	1	
Geophysical Research	1	Industrial Organization II	2	*Rock Physics (partly taught in English)*	*4*	Potential Methods	*4*	Elective Courses:	12	
Industrial Organization I	2	Industrial Property	1	*Global Dynamics of the Earth*	*4*	Hydrogeology	*4*	Students must choose one track from:		
English	2	English	2	*Sedimentary Basins*	*4*	Hydrogeochemistry	*4*	*Applied Geophysics in Natural Resources Exploration and Production -see next page*		
2nd Foreign Language: German, Spanish, Chinese, Japanese or Russian	2	2nd Foreign Language: German, Spanish, Chinese, Japanese or Russian	2	Accounting and Finance	2	Basin dynamics	*4*	*Applied Geophysics in Geotechnics and Environmental Studies -see next page*		
Computer Science Project (semester 5 and 6)	0	Computer Science Project (semester 5 and 6)	1	English	3	Decision making in Industry and Management	2	*HydroG3 - Hydrogeophysics, Hydrogeology, Hydrogeochemistry-see next page*		
		Geology Field Trip	1	2nd Foreign Language: German, Spanish, Chinese, Japanese or Russian	2	English	2	English	2	
		Geophysics Laboratory (taught in English)	2	Geophysics Laboratory (taught in English)	3	2nd Foreign Language: German, Spanish, Chinese, Japanese or Russian	2	Economics of Energy	2	
				QHSE - PSC1 Training	0	Field Trip Geophysical Logging	2	Business Organization and Strategy/Entrepreneurship	2	
						Geomechanics	2			
						Borehole Geophysics	1			
	30		30		30		30		30	30
120 ECTS										

Technical Modules | Human and Social Sciences | Practice | Guaranteed in English for incoming students

Last update: 29/11/2018

École et observatoire des sciences de la Terre
Université de Strasbourg

Engineering Degree Course in Geophysics

Cti Commission des titres d'ingénieur

Semester 9: Electives Students have to choose between 3 study tracks:	**Semester 10**
Applied Geophysics in Natural Resources Exploration and Production	**Final engineering project in a professional or research context** (30 ECTS)
Seismic processing and inversion (2 ECTS)	
Petrophysics for reservoir simulation (2 ECTS)	
Geomechanics (2 ECTS)	
Seismic imaging of geological heterogeneities (2 ECTS)	
Potential methods 2 (2 ECTS)	
Petroleum geology (2 ECTS)	
Applied Geophysics in Geotechnics and Environmental Studies	
Geotechnics (2 ECTS)	
Strength of materials applied to civil engineering (2 ECTS)	
Seismic Risk (2 ECTS)	
Rock Physics (2 ECTS) (partially taught in English)	
Electromagnetic methods (2 ECTS)	
HydroG3: Hydrogeophysics, Hydrogeology, Hydrogeochemistry	
Digital Tools and Methods (2 ECTS)	
Soils, multi-phase flow and complex transfers (2 ECTS)	
Methods and tools of geochemistry (2 ECTS)	
Mineral reactivity - Porous media (2 ECTS)	

Compulsory modules for the study track - *Optional modules in italics*
Every student must take at least 12 ECTS:
- 4 modules from the study track (compulsory plus electives)
- 2 other modules from semester 9. Among these 2 modules, one module can also be chosen from the EOST Master course.