Master of Science in Hydrogeology and Geothermics

(from the academic year 2021-2022)

Structure of the MSc in Hydrogeology and Geothermics / *MSc en hydrogéologie et géothermie* (120 ECTS)

Modules	ECTS	Status	Semester
Fundaments of hydrogeology and geothermics	18	obligatory	A1
Fundamental skills	12	obligatory	A1
Hydrogeological systems	9	obligatory	A1
Field and modelling methods I	12	obligatory	S1
Resources management I	9	obligatory	S1
Field and modelling methods II*	12	obligatory	S1
Resources management II*	9	obligatory	A2
Advanced methods*	3	elective	A2
Master thesis preparation and Master thesis research*	36	obligatory	A2+S2
Total ECTS of Master	**120**		

Modules and courses	Hours of courses	Semester	ECTS	Persons in charge	Evaluation mode
Fundaments of hydrogeology and geothermics			**18 ECTS**		
Hydrological and hydrogeological processes	56	A1	6	Prof. P. Brunner and Dr G. Preisig	Written exam, 2 hours
Groundwater chemistry and microbiology	28	A1	3	Prof. D.Hunkeler	Written exam, 1 hour
Geodynamics, earthquake physics and geothermics	56	A1	6	Prof. S. Miller	Written exam, 2 hours
Geothermal field trip	1 week	A1	3	Prof. S. Miller	CA (pass)
Fundamental skills			**12 ECTS**		
Mathématiques et statistiques	28	A1	3	Dr J. Straubhaar	Written exam, 1 hour
Scientific method and communication	28	A1	3	Prof. S. Miller and Dr L. Holloran	CA (graded)
Tests hydrauliques	28	A1	3	Prof. P. Renard	CA (graded)
Field camp I	1 week	A1	3	Drs L. Halloran and G. Preisig	CC (pass)

***See "Trasitional provisions" for students enrolled and beginning their 2nd year in September 2021-2022 (see p. 3)**

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Modules and courses	Hours of courses	Semester	ECTS	Persons in charge	Evaluation mode
Hydrogeological systems			**9 ECTS**		
Systèmes karstiques	28	S1	3	Prof. P.-Y. Jeannin	CA (graded)
Systèmes fissurés	28	S1	3	Prof. B. Valley	CA (graded)
Systèmes aquifères alluviaux	28	S1	3	Dr G. Preisig	CA (graded)
Field and modelling methods I			**12 ECTS**		
Tracer methods in hydrogeology	28	S1	3	Prof. D. Hunkeler	Written exam, 1 hour
Hydrogéophysique et diagraphies	28	S1	3	Profs B. Valley and K. Holliger	CA (graded)
Numerical modelling of transport and geomechanical processes	56	S1	6	Prof. S. Miller	CA (graded)
Resources management I			**9 ECTS**		
Water supply and protection	28	S1	3	Profs B. Valley and D. Hunkeler	CA (graded)
Contaminants Hydrogeology	28	S1	3	Prof. D. Hunkeler	CA (graded)
Engineering geology and geotechnics	28	S1	3	Prof. B. Valley and Dr G. Preisig	CA (graded)
Field and modelling methods II (from SA 2022-23)			***12 ECTS***		
Stochastic hydrogeology	*28*	*A2*	*3*	*Prof. P. Renard*	*CA (graded)*
Hydrogeological modelling	*28*	*A2*	*3*	*Prof. P. Brunner and Dr G. Preisig*	*CA (graded)*
Field camp II	*2 weeks*	*A2*	*6*	*Drs G. Preisig and L. Halloran*	*CA (pass)*
Resources management II (from SA 2022-23)			***9 ECTS***		
Urban hydrogeology and water treatment	*28*	*A2*	*3*	*Prof. M. Schirmer*	*CA (graded)*
Hydrologie humanitaire	*28*	*A2*	*3*	*Profs E. Milnes and P. Brunner*	*CA (graded)*
Géothermie de faible profondeur	*28*	*A2*	*3*	*Dr V. Badoux*	*CA (graded)*
Advanced methods (choose 1) (from SA 2022-23)			***3 ECTS***		
Remote sensing and advanced GIS	*28*	*A2*	*3*	*N.N. and Prof. P. Brunner*	*CA (graded)*
Analytical methods for emerging contaminants	*28*	*A2*	*3*	*Chemistry (to be confirmed)*	*CA (graded)*
Geological modelling	*28*	*A2*	*3*	*Prof. P. Renard*	*CA (graded)*
Master thesis preparation and Master thesis research (from SA et SP 2022-23)			***36 ECTS***		
Seminar and project	*90*	*A2*	*6*	*Profs P. Brunner, D. Hunkeler, S. Miller, B. Valley, P. Renard*	*CA (pass)*
Master thesis research		*S2*	*30*		*CA* [1]
Total of M Sc in Hydrogeology and Geothermics			**120 ECTS**		

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Transitional provisions 2021-2022 (A2 and S2)

For students enrolled in the program and beginning their 2nd year in September 2021

Modules and courses	Hours of courses	Semester	ECTS	Persons in charge	Evaluation mode
Modelling II			**7 ECTS**		
Numerical modelling of geomechanical processes	30	A2	3	Prof. S. Miller	CA (graded)
Géostatistique et modélisation inverse	40	A2	4	Profs P. Renard and P. Brunner	CA (graded)
Resource management			**15 ECTS**		
Water resource management in the European context	20	A2	2	Profs P. Brunner and D. Hunkeler	CA (graded)
Water resource management in semi-arid/arid regions and in humanitarian contexts	20	A2	2	Profs E. Milnes and P. Brunner	
Groundwater pollution and remediation	40	A2	4	Prof. D. Hunkeler	CA (graded)
Urban hydrogeology	20	A2	2	Prof. M. Schirmer	
Hydraulic tests in fractured aquifers	20	A2	2	Prof B. Valley	CA (pass)
Geothermal field trip	1 week	A2	3	Prof. S. Miller	CA (pass)
Master thesis preparation and Master thesis research			**38 ECTS**		
Literature review, scientific writing and master project proposal	90	A2	8	Profs P. Brunner, D. Hunkeler, S. Miller, B. Valley, P. Renard	CA (pass)
Master thesis research		S2	30		CA[1]

Abbreviations

CA (graded) = marked assignment, following teacher's instructions
CA (pass) = unmarked assignment (accepted/rejected)
CA[1] = marked thesis report + 1-hour-oral exam
A1 = autumn semester 2021-22
S1 = spring semester 2022
A2 = autumn semester 2022-23
S2 = spring semester 2023

Information

Professor in charge : **Prof. Benoît Valley** (benoit.valley@unine.ch)

Exams and regulation

Cadidates must be registred in IS-Academia for both courses and exams.

For regulation, please consult the homepage of the Faculty of Sciences, www.unine.ch/sciences ("règlement d'études et d'examens" and existing directives)

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Examination modalities in the case of online exam sessions

If an exam session has to be held online, the examination modalities mentioned in this study plan are maintained and will be following:

For **a written exam to be held during the exam session** (1h, 2h or 3h), the online exam will be of the duration mentioned by the study plan. An exception is made when the same exam evaluates two or more different courses simultaneously (indicated as a common or grouped exam in the study plan). In this case, the courses will be examined separately when the exam takes place online. The duration of each part of the on-line exam will be defined by the number of ECTS each examined course. A single mark will be notified for any such split up exam, as specified by the study plan.

For **oral exams to be held during the exam session**, the online duration of the exam is maintained as specified in the study plan.

Continuous assessments (graded or ungraded) remain unchanged even if the exam session is taking place online. If required, the evaluation modality will be adapted to the situation. The course description will be updated accordingly by the teacher in charge.

All exams and assessments that take place in other Faculties or Universities remain under their responsibility and the FS cannot be held liable for specific rules and regulations regarding those evaluations.