Curriculum of Engineering Geology at the RWTH-Aachen And TU-Berlin

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TECHNICAL UNIVERSITY OF BERLIN

Course of Study

Geotechnology

Science of geotechnical reconnaissance, modeling and handling of the structures and materials of the upper earth crust

subject specific knowledge	technical rules, law	economic aspects	ecological aspects

Bachelor of Science

6 semesters

(start of the first bachelor-course: Oct. 2005

Master of Science

4 semesters

(start of the first master-course: Oct. 2008)

TECHNICAL UNIVERSITY OF BERLIN

Course of Study

"Geotechnology"

Departments involved

- Hydrogeology
- Engineering Geology
- Exploration Geology
- Applied Geophysics
- Mineralogy

Technical University of Berlin, Course of Study “Geotechnology”

Objects of the Bachelor-course

- Capability of understanding ground engineering projects
- Capability of planing, managing and evaluating ground reconnaissance projects goal-oriented
- Application of geotechnological scientific methods
- Ability to work as part of a team

Objects of the Master-course

- Focus on a geotechnological main subject combined with a geotechnical subsidiary subject
- Capability of working as a scientist
- Capability of solving geotechnological problems independently

Bachelor-Course of Study/Geotechnology/TU-Berlin

	semester					
ETCS	**1**	**2**	**3**	**4**	**5**	**6**
1	analysis I for engineers	linear algebra for engineers	analysis II for engineers	mechanics	basics of engineering sciences	specific geotechnologies I
2						
3						
4						
5						
6		6 ETCS				6 ETCS
7		introduction to modern physics for engineers				specific geotechnologies II
8	8 ETCS		8 ETCS	8 ETCS		
9	introduction to conventional physics for engineers		interdisciplinary teaching	optional subject		
10						
11						
12		6 ETCS			12 ETCS	6 ETCS
13		practical training in physics			optional subject	interdisciplinary project
14	6 ETCS	3 ETCS	6 ETCS			
15	universal and anorganic chemistry		basics of geotechnologies	8 ETCS		
16		interdisciplinary teaching				
17				basics of geosciences II		
18					6 ETCS	6 ETCS
19					integrated geotechnologies	bachelor thesis
20						
21		6 ETCS				
22						
23	9 ETCS					
24	basics of geosciences I					
25						
26						
27						
28						
29						
30	7 ETCS	9 ETCS	16 ETCS	14 ETCS	12 ETCS	12 ETCS
Σ	**30 ETCS**	**30 ETCS**	**30 ETCS**	**30 ETCS**	**30 ETCS**	**30 ETCS**

Master-Course of Study/Geotechnology/TU-Berlin

	semester			
ETCS	**1**	**2**	**3**	**4**
1	geotechnology/ main subject I	geotechnology/ main subject II	geotechnology/ main subject III	master thesis
2				
3				
4				
5				
6	6 ETCS		6 ETCS	
7	geotechology/ subsidiary subject		practical project/ main subject related	
8				
9				
10				
11				
12	6 ETCS	12 ETCS	6 ETCS	
13	geotechnology/ subsidiary subject II	geotechnolgy/ main subject related subject	seminar	
14				
15			3 ETCS	
16			engineering sciences/ subject II	
17				
18	6 ETCS			
19	engineering sciences/ subject I			
20				
21			6 ETCS	
22			interdisciplinary subject	
23				
24	6 ETCS	12 ETCS		
25	optional subject	optional subject		
26				
27				
28				
29				
30	6 ETCS	6 ETCS	9 ETCS	30 ETCS
Σ	**30 ETCS**	**30 ETCS**	**30 ETCS**	**30 ETCS**

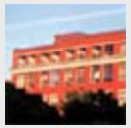
RWTH Aachen University

Course of Study

"Applied Geosciences"

Focus Geophysics, Hydro and Engineering Geology






Departments involved

- Geology
- Geography
- Civil Engineering
- Physics
- Mathematics
- Chemistry




RWTH Aachen University, Course of Study “Applied Geosciences”

- Geosciences in Aachen are focusing Georessources
- All aspects of exploration, usage, management, protection and remediation
- Construction ground, environment, geomaterials (clay) or water are georessources which will be used by humans
- Engineering geology in enterprises is often in combination with Civil /Mining Ground Engineering or Hydrogeology
- Many Engineering Geologists use exploration techniques from geophysics and many engineering problems are water related, there for better combination
- Aachen concept is a one hand Engineering Geologist with a broad knowledge of Engineering Geology, Hydrogeology and Geophysics, focusing on Engineering aspects of Geology using techniques of the all above.
- Good knowledge of basic sciences (mathematics, chemistry, physics) and engineering specialisations (mechanics, soil mechanics) relevant for engineering geology
- Broadly applicable in field, laboratory or office (data analysis, data bases, GIS)

RWTH Aachen University, Course of Study "Applied Geosciences"

Objects of the Bachelor-course

- Capability of understanding the ground and its related engineering problems
- Capability of planing, managing and evaluating ground reconnaissance projects goal-oriented
- Application of geotechnological scientific methods
- Ability to work as part of a team

Objects of the Master-course

- Focus on a geotechnological main subject, but understand the neigbouring disciplines
- Capability of working as a scientist
- Capability of solving geotechnological problems independently

Bachelor-Course **„Applied Geosciences“,** *Geophysics, Hydro- and Engineering Geology* RWTH Aachen

	semester					
ECTS	1	2	3	4	5	6
1	Chemistry ECTS 3,5	Chemistry ECTS 6,5	Physics ECTS 5,5	Physics ECTS 7,5	Polarising Microscopy ECTS 2,5	Methods in Geosciences II ECTS 5
2						
3						
4					Properties Mineral Powder ECTS 2,5	
5	Mathemantics I ECTS 7	Mathematics II ECTS 7	Introduction to Geochemistry and Petrology ECTS 7	Dynamic Earth Systems ECTS 2,5	Earth History and Regional Geology ECTS 2,5	Fundamentals of Applied Geophysics II ECTS 6
6						
7						
8						
9						
10				Polarising Microscopy ECTS 2,5	Fundamentals of Applied Geophysics I ECTS 6	
11	System Earth ECTS 7,5	Georessources and Natural Hazards ECTS 4,5	Introduction to Crystallography ECTS 4,5	Earth History and Regional Geology ECTS 4,5	Chemistry and Hydraulics of Groundwater ECTS 9	Field Training Exploration Methods (Geophy., Hydrogeol., Eng. Geol.) ECTS 5
12						
13						
14						
15						
16						
17						Engineering Geology of Soils and Rocks ECTS 2,5
18			Introduction to Physics of Earth ECTS 4,5	Methods in Engineering Geology and Hydrogeology ECTS 7,5	Engineering Geology of Soils and Rocks ECTS 7,5	Bachelor Thesis ECTS 12
19	Materials of Earth ECTS 7,5	Methods in Geosciences I ECTS 7	Dynamic Earth Systems ECTS 5	Field Mapping ECTS 4	Exkursion / Field Work	
20						
21						
22						
23						
24						
25						
26	Georessources and Natural Hazards ECTS 2,5	Internship / Practical Training ECTS 5	Methods in Engineering Geology and Hydrogeology ECTS 2,5			
27						
28						
29	Exkursion / Field Work		Exkursion / Field Work			
30						
Σ	30	30	30	30	30	30
from experience	28,5	31,5	30	30,5	29	30,5

Bachelor-Course **„Applied Geosciences“,** *Geophysics, Hydro- and Engineering Geology* RWTH Aachen

	semester					
ECTS	1	2	3	4	5	6
1	Chemistry ECTS 3,5	Chemistry ECTS 6,5	Physics ECTS 5,5	Physics ECTS 7,5	Polarising Microscopy ECTS 2,5	Methods in Geosciences II ECTS 5
2					Properties Mineral Powder ECTS 2,5	
3					Earth History and Regional Geology ECTS 2,5	Fundamentals of Applied Geophysics II ECTS 6
4	Mathemantics I ECTS 7	Mathematics II ECTS 7	Introduction to Geochemistry and Petrology ECTS 7	Dynamic Earth Systems ECTS 2,5	Fundamentals of Applied Geophysics I ECTS 6	
5				Polarising Microscopy ECTS 2,5		Field Training Exploration Methods (Geophy., Hydrogeol., Eng. Geol.) ECTS 5
6	System Earth ECTS 7,5	Georessources and Natural Hazards ECTS 4,5	Introduction to Crystallography ECTS 4,5	Earth History and Regional Geology ECTS 4,5	Chemistry and Hydraulics of Groundwater ECTS 9	Engineering Geology of Soils and Rocks ECTS 2,5
7	Materials of Earth ECTS 7,5	Methods in Geosciences I ECTS 7	Introduction to Physics of Earth ECTS 4,5	Methods in Engineering Geology and Hydrogeology ECTS 7,5	Engineering Geology of Soils and Rocks ECTS 7,5	Bachelor Thesis ECTS 12
8	Georessources and Natural Hazards ECTS 2,5	Internship / Practical Training ECTS 5	Dynamic Earth Systems ECTS 5	Field Mapping ECTS 4		
9	Exkursion / Field Work		Methods in Engineering Geology and Hydrogeology ECTS 2,5	Exkursion / Field Work	Exkursion / Field Work	
10			Exkursion / Field Work			
Σ	30	30	30	30	30	30
from experience	28,5	31,5	30	30,5	29	30,5

Master-Course

„Applied Geosciences“,

Geophysics, Hydro- and Engineering Geology

RWTH Aachen

	semester			
ECTS	1	2	3	4
1	Environmental Geochemistry ECTS 2,5	Environmental Geochemistrv ECTS 4,5	Datamangement ECTS 5	Master Thesis ECTS 30
2				
3				
4	Groundwater Modeling			
5				
6		Communication	Engineering Geology III	
7				
8				
9		ECTS 5	ECTS 4	
10		Engineering Geology II	Groundwater Management	
11				
12	ECTS 10	ECTS 2,5		
13		Energy and Reactive Flow in Groundwater		
14	Engineering Geology II			
15				
16				
17		ECTS 5		
18		Engineering Geology III		
19			ECTS 10	
20			Geophysics	
21				
22	ECTS 9,5	ECTS 5		
23	Energy and Reactive Flow in Groundwater	Exkursion / Field Work		
24				
25				
26				
27	ECTS 5			
28				
29		ECTS 7	ECTS 10	
30			Hydrochemistry	
> 30			ECTS 5	
Σ	27	29	34	30

Master-Course

„Applied Geosciences“,

Geophysics, Hydro- and Engineering Geology

RWTH Aachen

	semester			
ECTS	1	2	3	4
1	Environmental Geochemistry ECTS 2,5	Environmental Geochemistry ECTS 4,5	Datamangement ECTS 5	Master Thesis ECTS 30
2				
3	Groundwater Modeling ECTS 10			
4				
5		Communication ECTS 5	Engineering Geology III ECTS 4	
6				
7				
8				
9				
10		Engineering Geology II ECTS 2,5	Groundwater Management ECTS 10	
11				
12				
13	Engineering Geology II ECTS 9,5	Energy and Reactive Flow in Groundwater ECTS 5		
14				
15				
16				
17				
18		Engineering Geology III ECTS 5	Geophysics ECTS 10	
19				
20				
21				
22				
23	Energy and Reactive Flow in Groundwater ECTS 5	Exkursion / Field Work ECTS 7		
24				
25				
26				
27				
28				
29				
30			Hydrochemistry ECTS 5	
> 30				
Σ	27	29	34	30