Courses Applied Geophysics
2024-2026

Summary

The Applied Geophysics programme is taught at three partner universities:
TU Delft, ETH Zurich and RWTH Aachen

First year Delft: A minimum of 24 credits must be obtained from TU Delft subjects, whereby all of the three following blocks must be passed:

- JMAG110 Field Geophysics and Signal Analysis with Matlab Exercises
- JMAG100 Electromagnetic Exploration Methods
- JMAG111 Advanced Reflection Seismology and Seismic Imaging

Code	Subject	ECs
JMAG100	Electromagnetic Exploration Methods	6
JMAG121	Geophysics Special Subjects	6
JMAG111	Advanced Reflection Seismology and Seismic Imaging	6
JMAG120	Seismic Acquisition to Data Information Content	6
JMAG110	Field Geophysics and Signal Analysis with Exercises	6

First year Zürich: A minimum of 24 credits must be obtained from the ETH Zürich subjects, whereby the block consisting of the two subjects

- 651-4104-00L Geophysical Fieldwork and Processing: Methods
- 651-4106-03L Geophysical Fieldwork and Processing: Preparation and Field Work

is obligatory and one out of the following two block must be passed:

- 651-4079-00L Reflection Seismology Processing
- 651-4094-00L and 651-4096-00L Modelling and Inverse Theory for Applied Geophysics

Code	Subject	ECs
651-4079-00L	Reflection Seismology Processing	5
651-4087-01L	Case Studies in Exploration and Environmental Geophysics	3
651-4094-00L	Numerical Modelling for Applied Geophysics	4
651-4096-00L	Inverse Theory I: Basics	3
651-4096-02L	Inverse Theory II: Applications	3
651-4104-00L	Geophysical Fieldwork and Processing: Methods	2
651-4106-03L	Geophysical Field Work and Processing: Preparation + Field Work	7
651-4110-00L	Computational Methods in Seismic Data Analysis and Imaging	3
651-4109-00L	Geothermal Energy	5
651-4240-00L	Geofluids	5
701-0106-00L	Mathematics V: Applied Deepening of Mathematics I – III	3

Courses Applied Geophysics

Second year Aachen: A minimum of 24 credits must be obtained from the RWTH Aachen subjects, whereby three of the following seven blocks must be passed:

- 5.314.584 and 5.326.003 Petrophysics for Applied Geophysics (Petrophysics and Laboratory Practicals: Applied Reservoir Petrophysics)
- 5.314.570 and 5.3.50.132 Geophysical Logging and Log Interpretation
- 5.412.003 Inversion Concepts for Multi-Method Geophysics
- 5.318.482 and 5.329.469 Hydrogeophysics and Engineering Geophysics
- 5.342.487 Computational Continuum Mechanics
- 5.326.004 Scientific Machine Learning
- 5.412.000 Research Module in Applied Geophysics

Code	Block	Subject	ECs
5.314.570	1	Petrophysics for Applied Geophysics	3
5.350.132	1	Laboratory Practicals: Applied Reservoir Petrophysics	3
5.314.570	2	Geophysical Logging and Log Interpretation	3
5.350.132	2	Fieldwork: Geophysical Logging and Log Interpretation	3
5.412.003	3	Inversion Concepts for Multi-Method Geophysics	6
5.318.482	4	Hydrogeophysics	3
5.329.469	4	Engineering geophysics	3
5.342.487	5	Computational Continuum Mechanics	6
5.412.000	6	Research Module in Applied Geophysics	6
5.326.004	7	Scientific Machine Learning	6
5.345.471	8	Portfolio Management and Prospect Evaluation	3
5.424.346	8	Energy Resource Management	3
5.312.002	9	Principles of Plate Tectonics	3
5.323.301	9	Sedimentary Basin Dynamics	3
5.349.932	10	Neotectonics and Earthquake Geology	3
5.213.002	10	Remote Sensing of Geohazards	3
5.100.010	11	Final Disposal and Projects	3
5.100.017	11	Geological & Engineering Basics of Final Disposal	3
1.253.420		Machine Learning	6
4.100.220		Finite Elements in Fluids	6
5.330.255		Seismic Interpretation and Well Integration	3
5.331.439		Data analysis in Geoscience	3
5.332.383		Underground Excavation	6
5.333.690		Advanced Remote Sensing Methods	3
5.434.827		Mineral Exploration	3
8.118.471		Economics of Technological Diffusion	6
5.321.003		GIS-intensive course for Engineering	3

Second year Delft/Aachen/Zürich: Final thesis

Code	Subject	ECs
JMAG230	Final Thesis Applied Geophysics	30