

Repository Safety

New M. Sc. specialization

in Mineral Resources Engineering (M. Sc.)



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Germany has phased out nuclear power generation. The challenge that nevertheless remains is to safely dispose of the radioactive waste resulting from operating and decommissioning nuclear power plants. For this purpose, Germany is envisaging final disposal of the generated radioactive waste in deep geological formations.

The safe final disposal of radioactive waste is one of the greatest challenges facing today's societies throughout the world. In Germany, this project is expected to take almost 100 years to be completed.

Final disposal projects in other countries are similarly complex, however, well-trained young professionals are lacking. Therefore, providing young, responsible scientists with excellent and comprehensive training in all aspects regarding final disposal is a matter of great importance and urgency, not only in Germany, but also on the international level.

For safety's sake...

The specialization „Repository Safety“ is a further cornerstone of the master's program in Mineral resources engineering. As an additional pillar, it complements purposefully the existing specializations „Mining“ and „Recycling“ and expands the topic of sustainable handling of raw materials and energy sources to include the aspect of protecting future generations from the harmful effects of ionizing radiation of radioactive waste.

The program is interdisciplinary, practice-oriented and international, all lectures are held in English. By integrating competencies in the natural sciences and engineering with socio-political concerns, the specialization provides graduates with comprehensive analytical, methodological, assessment and problem-solving skills that open up a very broad field of professional activity.



Photo: BGE

Course of studies

The specialization is structured over 4 semesters. In the first two semesters, students learn the fundamentals of the field of final disposal, and in the second semester, they are introduced to additional topics from the disciplines of raw materials engineering and geosciences.

The 3rd semester offers a mobility window in which students can choose between spending a semester abroad, working on research projects, excursions, industrial internships or thematic lectures offered at the RWTH university in the scope of final disposal. This structure allows students to specialize according to their interests and to deepen their education in specific areas of their choice.

The 4th semester is reserved to complete both the master's thesis and a professional internship at institutions which are active within the field of final disposal

Career prospects

On a national and international level, graduates of the specialization Repository Safety can be professionally active in the following fields of radioactive waste final disposal:

- Repository operators or commissioners (Waste Management Organizations), nationally: Bundesgesellschaft für Endlagerung (BGE), Gesellschaft für Zwischenlagerung (BGZ)
- Regulatory bodies, nationally: Federal Ministry for the Environment (BMUV), Federal Office for the Safety of Nuclear Waste Disposal (BASE), Federal Office for Radiation Protection BfS)
- Technical Support Organisations (TSO), nationally: e.g. Gesellschaft für Anlagen- und Reaktorsicherheit (GRS), Öko-Institut, Institut für Geomechanik (IfG), various consulting institutions, e.g. Brenk Systemplanung Aachen
- Research institutions that are active in the field of final disposal (e.g. FZ Jülich, FZ Karls-

- ruhe, FZ Rossendorf, Geoforschungszentrum Potsdam etc.)
- Supranational institutions working in the field of final disposal such as IAEA or OECDNEA
- Industry: container development, repository technology, monitoring, exploration and investigation
- Universities: in terms of conveying the knowledge in the field of disposal in the coming years, e.g. occupying new educational chairs in the future.
- Scientific media tools
- Consulting firms in the field of waste management or water supply as well as those providing strategic advice in the political and socio-scientific context
- Companies and public institutions in the field of exploration and monitoring of geosystems.
- Regulatory and licensing authorities responsible in the above-mentioned fields of expertise

Graduates of the Repository Safety specialization possess excellent chances to be employed in additional occupational fields due to their in-depth training both in mining engineering and geosciences.

Relevant Employers are for instance:

- Companies in the raw materials industry
- Energy storage operators
- Industrial companies involved in the planning, construction or operation of facilities for the disposal of chemical-toxic wastes

The new specialization Repository Safety is aimed at students with a bachelor's degree in mineral resources engineering and geosciences as well as bachelor's graduates in physics, chemistry, biology, radiation protection, other engineering sciences.

Program Design

1 st semester 30 CP	2 nd semester 30 CP	3 rd semester 30 CP	4 th semester 30 CP
5 Mandatory modules	4 Mandatory modules	5 Elective modules	Master Thesis
Basics of Final Disposal	Safety Analysis, Repository Design and Processes	Semester Abroad	External or Internal plus Practical Course
Geological Models and Reservoir Engineering	Geostatistical Theories, Data and Models	Research Projects	
Mining Equipment – Advanced Level	Radiation Protection, Nuclear Technology and Applications	Industrial Internship	
Underground Excavation	Geodata and Georisks, Mine Design and Simulation	Elective Courses at RWTH	
Law, Site Selection and Participation		Field Trips/ Exercises	



Where can I get more information?

About the study program and subject-specific details:

Master Program Mineral Resources Engineering (M. Sc.)

Studienberatung-roi@rohstoffe.rwth-aachen.de
www.rohstoffe.rwth-aachen.de



fre_rwth

General information about the specializations, program content, applications and enrollment:

Student Advice Centre

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52062 Aachen
Tel: +49 241 80 94050
studienberatung@rwth-aachen.de
www.rwth-aachen.de/studienberatung

From a Student perspective:

Student council of Division of Mineral Resources and Raw Materials Engineering

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About the supervising Chair:

ELS – Chair for Repository Safety

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Division of Mineral
Resources and
Raw Materials
Engineering

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