



Deutscher Akademischer Austauschdienst
German Academic Exchange Service



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Master's degree



Materials Engineering (International Profile)

RWTH Aachen University • Aachen

Overview

Degree	Master of Science
Teaching language	<ul style="list-style-type: none">• English
Languages	Courses are held exclusively in English.
Programme duration	4 semesters
Beginning	Winter and summer semester
Application deadline	Application deadlines are as follows: <ul style="list-style-type: none">• for students coming from outside of the EU<ul style="list-style-type: none">◦ winter semester: 1 March◦ summer semester: 1 September• for students from the EU<ul style="list-style-type: none">◦ winter semester: 15 July◦ summer semester: 15 January
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	<p>Materials are key enablers for nearly all technological processes. From the Stone Age through the Bronze Age and the Iron Age to the Modern Age, new material classes exhibiting superior properties have defined eras in human development. This does not only include technological progress, but it also directly affects the economic, ecological, and social development of human mankind.</p> <p>Current technological challenges of high relevance include power generation from renewable sources, e-mobility, and CO2 reduction, to name but a few. The major barrier for technological breakthrough in these fields is the lack of suitable materials meeting the technological demands on their property profile, for example:</p> <ul style="list-style-type: none">• Large-scale power generation: lack of suitable materials withstanding the high operating temperatures and corrosive attack• Electric mobility: lack of battery materials offering high electric capacity with a small ecological footprint• Hydrogen-powered heavy industries: lack of suitable H2 capture and storage solutions due to the high mobility of hydrogen• Direct CO2 and conversion: lack of suitable catalytic materials

The international Master's programme in Materials Engineering at RWTH Aachen University aims at addressing the above mentioned challenges by offering a broad study programme in the field of materials science and engineering. This includes the entire materials development process starting with materials design on the atomic scale all the way to the construction of bulk components of high structural integrity and complex property profiles, naturally including the underlying production and manufacturing processes required. A specific emphasis is put on the correlation between materials composition and structure as well as production and manufacturing processes on the evolving properties.

Knowledge and understanding of these correlations will enable graduates of this programme to theoretically and experimentally address scientific as well as engineering problems both in fundamental research and in application-oriented development in industry. Graduates are able to manage projects and work in interdisciplinary teams using state-of-the-art materials simulation and analysis techniques to create novel materials solutions for innovative engineering applications and production processes.

Course Details

Course organisation	Curriculum
	<p>First semester: basic subjects Second and third semester: core subjects in specialisation fields Fourth semester: Master's thesis</p> <p>Specialisation fields:</p> <ul style="list-style-type: none"> • Materials Physics and Design • Energy Materials • Materials Science of Steel • Corrosion Engineering • Structural Integrity • Sustainable Process Metallurgy and Metal Recycling • Sustainable Metal Forming and Casting <p>The curriculum may be individualised by the selection of core subjects from a catalogue and the choice of student mini thesis as well as Master's thesis topics from any institute of the department as well as affiliated institutes at Forschungszentrum Jülich, independent of the selected specialisation field. Upon application to the Examination Board, industrial internships may also be integrated in the curriculum.</p>
A Diploma supplement will be issued	Yes
Integrated internships	Optionally, students may include an industrial internship in Germany or in the EU into their curriculum.
Course-specific, integrated German language courses	No
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR None

Semester contribution Although there are no tuition fees, a semester fee of approximately 300 EUR is required.

Funding opportunities within the university No

Requirements / Registration

Academic admission requirements

The Master's programme in Materials Engineering (International profile) is aimed at national as well as international Bachelor's graduates from degree programmes in engineering, physics, chemistry, or related fields.

Applicants have to provide evidence of a predefined number of credits in fundamental subjects – mathematics, physics, chemistry etc. – as well as engineering subjects – mechanics, electric engineering, machine elements, etc. – as outlined in the examination rules.

English language skills are required. The programme is entirely taught in English.

Language requirements

A TOEFL/IELTS test result as defined in the examination rules is required.

Application deadline

Application deadlines are as follows:

- for students coming from outside of the EU
 - winter semester: 1 March
 - summer semester: 1 September
- for students from the EU
 - winter semester: 15 July
 - summer semester: 15 January

Submit application to

All applications have to be uploaded via the online application system: <https://online.rwth-aachen.de/>.

Services

Support for international students and doctoral candidates

- Welcome event
 - Specialist counselling
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RWTH Aachen University

RWTH Aachen University exploits strong research networks and the intellectual curiosity of its staff to address bold scientific questions, transfer forefront knowledge and drive innovative discoveries that impact global challenges.

The Excellence Initiative of the German federal and state governments provided RWTH with a unique opportunity to boost its research profile by strengthening the natural sciences and fostering interdisciplinary research. These were the first steps in RWTH's steady transformation into an Integrated Interdisciplinary University of Technology and also towards convergence.

Topics include sustainable synthetic fuels, data mining, computational science, production technology, high-performance materials, health, renewable resources and mobility.

The successful implementation of the institutional strategy is reflected in the reputation of RWTH's graduates, the exceptional position of the university regarding acquisition of peer-reviewed third party funds and the [RWTH Aachen campus](#).

The RWTH Aachen campus visibly highlights the research prowess of the university. The entrepreneurial mindset and collaboration with industry partners fostered on the campus benefit both students and employees of RWTH.

The many stimulating ideas have already had an impact in Aachen and the entire tri-border region of Germany, Belgium and the Netherlands. An innovative knowledge community is evolving that is closely networked with some of the world's leading research and industry partners.

RWTH is a major driving force behind this development. And Aachen, as a liveable and lovable city at the crossroads of three cultures, provides an ideal environment for this creative hub.



Contact

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🌐 Course website: <https://www.rwth-aachen.de/go/id/omse?#aaaaaaaaaatgwpa>

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International Programmes in Germany - Database

www.daad.de/international-programmes
www.daad.de/sommerkurse

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