



Deutscher Akademischer Austauschdienst
German Academic Exchange Service



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Master's degree



Water Security and Global Change

Dresden University of Technology • Dresden

Overview

Degree	Master of Science (MSc)
In cooperation with	Dresden University of Technology (TUD) Indian Institute of Technology Madras (IITM) Rheinisch-Westfälische Technische Hochschule Aachen (RWTH Aachen)
Teaching language	<ul style="list-style-type: none">English
Languages	English
Full-time / part-time	<ul style="list-style-type: none">full-time
Mode of study	Fully on-site with voluntary online elements
Programme duration	4 semesters
Beginning	Winter semester
Application deadline	30 April 2025
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	Yes
Description/content	<p>The Joint Master's programme in Water Security and Global Change offers a truly international learning experience, welcoming applications from all nationalities. This programme immerses students in a dynamic educational environment that addresses the urgent and vital issue of water security, bridging perspectives from both the global South and global North. Drawing on the collective expertise of all partner institutions, the new Master's programme adopts an integrated and comprehensive approach to meet the needs of regional, national, and international stakeholders.</p> <p>Building upon existing modules, the programme features a modular structure with opportunities for study abroad and specialisation. Student mobility is coordinated as part of this collaborative effort, alongside the development and implementation of communication, dissemination, and</p>

marketing strategies. Courses are taught by experts from the participating institutions, ensuring a high standard of education.

Internships and Master's theses are conducted in close collaboration with selected companies, governmental agencies, and NGOs, providing students with practical experience and real-world connections. Through a jointly developed and operated curriculum, the programme is established across three degree-awarding universities (RWTH Aachen, IIT Madras, TU Dresden), with two associated partners (UNU Flores and AIT Bangkok). Upon completion, students receive a joint degree. Accreditation is pursued independently through the participating universities.

What does this programme offer?

- Understanding water systems: Gain comprehensive insight into the hydrological cycle, water system components, and their interactions with the environment, society, and ecosystems.
- Global change impacts: Explore the repercussions of global change, including climate change, on water resources and ecosystems. Gain an understanding of the effects of temperature shifts, precipitation patterns, and sea level rise on water availability and quality.
- Water policy and governance: Learn about water resource governance structures, policies, and regulations at various levels, from local to international, and their implications for water security.
- Water quality and pollution: Study water pollution sources, their impacts on human health and the environment, and strategies for monitoring and enhancing water quality.
- Water resource management: Develop skills in managing and optimising water resources, including sustainable water use, conservation, and integrated management strategies.
- Risk assessment and resilience: Learn to assess and mitigate water-related risks such as floods, droughts, and water scarcity, and build resilience in water systems.
- Interdisciplinary approaches: Collaborate across disciplines, integrating knowledge from environmental science, engineering, policy, economics, and social sciences to address water security challenges.
- Research and analysis: Enhance research skills and analytical abilities to investigate complex water-related problems and propose evidence-based solutions.
- Ethical and social considerations: Explore ethical, social, and equity aspects of water security, acknowledging access to clean water as a fundamental human right.

Course Details

Course organisation

The Joint Master's programme has a scope of earning 120 ECTS points / 213 IITM credits in total. It consists of three semesters of course work with 90 ECTS points / 159 IITM credits in total and a fourth semester of thesis of 30 ECTS / 54 IITM credits. Each semester consists of 30 ECTS points / 54 IITM credits of course work with courses of 5 or 7.5 ECTS points. 30 ECTS (approx. 51 to 54 IITM credits) per semester may change according to the agreed schedule (see programme timeline table). Coursework consists of mandatory and elective courses, which are offered equally by all three partner universities and sum up to 30 ECTS points / 53 IITM credits provided by each partner university. The programme enables to define up to 30 ECTS points / 53 IITM credits elective courses.

Study contents of RWTH Aachen University, Germany

- Climate Adaptation in Coastal & Hydraulic Engineering
- International Project Management
- Technological Modernisation and Globalisation
- Flood Protection
- Environment, Local Economies & Resource Conflict
- Geographic Information System in Water Management I
- Hydrodynamic Simulation
- Hydraulic Engineering
- Numerical Modelling in Water Resources Management
- Global Changes and Sustainable Development
- Geographical Information Systems in Water Management II
- Flood Risk Management
- Sediment Transport and Morphodynamics
- Industrial Waste Water Treatment

- Sanitary Engineering in Developing Countries

Study contents of Indian Institute of Technology Madras IITM, India

- Physics-Chemical Processes for Water & Wastewater Treatment
- Sustainability in River Basin Management
- Water, Health and Hygiene
- Water Resources Planning & Management
- Contaminant Transport Modelling
- Ocean Environment Policy & Coastal Zone Management
- Technology & Sustainable Development
- Coastal Engineering
- Numerical Techniques in Ocean Hydrodynamics

Study contents of Dresden University of Technology TUD, Germany

- Ground Water
- Urban Water Management
- Water Extremes – Risk Management and Adaptation
- Hydraulic Engineering
- International Water Issues
- Climate Systems and Climate Modelling
- Natural Forest Management & Restoration in the Tropics
- Environmental Perspectives on Resource Nexus (UNU-FLORES)
- From Concept to Policy and Practice Impact: Advancing the Resource Nexus (UNU-FLORES)

A Diploma supplement will be issued	Yes
Certificates for specific modules are awarded	Yes
International elements	<ul style="list-style-type: none"> • Courses are led with foreign partners • Integrated/optional study abroad unit(s)
Integrated/optional study abroad unit(s)	<p>This programme facilitates students' mobility across three universities as a unified cohort. Students commence their academic journey at IIT Madras around August for approximately nine months, followed by five months at TU Dresden and another five months at RWTH Aachen. The Master's thesis is executed at any of these locations for five months.</p> <p>At IIT Madras, five courses are offered (four mandatory and one elective), while TU Dresden and RWTH Aachen provide six courses each (three mandatory and three elective). The final semester focuses on the Master's thesis, supervised by advisers from one or more partner or associated universities.</p>
Course-specific, integrated German language courses	No
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR	None
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Semester contribution	<ul style="list-style-type: none"> • Fees at IIT Madras: 36,400 INR per semester • Fees at TUD: 287 EUR per semester • Fees at RWTH: 335 EUR per semester <p>Total fees per semester = 622 EUR + 36,400 INR</p>
Costs of living	Dresden and Aachen (as well as Chennai) offer high quality of living at very moderate costs. Currently, students should expect to pay around 850 EUR per month including rent, food, insurance and basic expenses. This figure is relatively low compared to other big German cities.
Funding opportunities within the university	No

Requirements / Registration

Academic admission requirements	<p>Admission to the programme may be granted to applicants who have received a Bachelor's or comparable degree which fulfils the following conditions:</p> <ul style="list-style-type: none"> • The qualifying degree needs to have a major focus in one of the academic subjects listed below: <ul style="list-style-type: none"> ◦ Civil Engineering ◦ Mechanical Engineering ◦ Environmental Engineering ◦ Hydro Science Engineering ◦ Water Resources Engineering ◦ Computational engineering ◦ Agricultural or Landscape Engineering • The qualifying degree needs to encompass a minimum workload of 180 ECTS points or must have been awarded by a higher education institution officially recognised by at least one of the following institutions: <ul style="list-style-type: none"> ◦ AICTE, AIU, ACU, IAU, Central Office for Foreign Education • The accumulated grade point average of the qualifying degree shall not be below 60% aggregate marks or “first class”.
Language requirements	<p>Students who have not completed their graduate study in English must pass either of the following recognised English tests.</p> <ul style="list-style-type: none"> • IELTS: 6.5 minimum overall, with at least 6.0 in each component • TOEFL: 88 overall with no less than 21 in reading, 20 in listening, 22 in speaking and 21 in writing
Application deadline	30 April 2025
Submit application to	https://admissions.ge.iitm.ac.in/joint-program-in-water-security-and-global-change-with-iit-madras-tu-dresden-and-rwth-aachen

Services

Possibility of finding part-time employment	In order to top up their budgets, some students may want to look for temporary work in Dresden and Aachen. If so, different regulations apply for students from EU member states, countries of the
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European Economic Area (EEA) and Switzerland, and students from outside the European Union and the EEA area. In addition, restrictions on the duration of employment may apply. Professors, lecturers and group leaders involved in the Master's programme may offer students the possibility of working as academic assistants. However, living expenses can be financed only partially through a job as an academic assistant.

Accommodation

It is still relatively easy to find affordable accommodation in Dresden and Aachen. Accommodation is available either via the "Studentenwerk Dresden" in Dresden, the "Studierendenwerk Aachen" in Aachen or on the private market of both cities. Rent for a single room in a student residence is approx. 300 to 450 EUR per month.

Private housing can be found online. We recommend that you move into a hall of residence at the beginning of your stay in Dresden. Subsequently, you can look for a place on the private market or in a shared apartment, which is known as a "Wohngemeinschaft" in German.

Career advisory service

TU Dresden and RWTH Aachen offer plenty of counselling and training within its Career Services to help students with finding professional orientation. They offer workshops to equip students with professional skills and aid to optimise your CV. Furthermore, they support students networking with potential employers.

Additionally, there are special workshops for international students to get to know the German and Saxon job market and network.

Support for international students and doctoral candidates

- Welcome event
- Buddy programme
- Tutors
- Cultural and linguistic preparation

Our Partners



Studying in Dresden: Your Uni, No Matter What

As individual as you are – that is your TU Dresden. No matter where you come from, where you want to go and what you need, here you will find the study programme that suits you. Whether technology, humanities, teaching, environmental or natural sciences. We have almost all of them: over 120 degree programmes and over 30,000 fellow students. Why study here? Because you can!

» more:
<https://www.youtube.com/watch?v=dznGpL3KFo>

Dresden University of Technology

TU Dresden University of Technology

TU Dresden is one of eleven Universities of Excellence in Germany and is among the top universities in Europe: strong in research, it offers first-rate programmes with an overwhelming diversity, with close ties to culture, industry and society. As a modern comprehensive university with five schools (17 faculties), it offers a wide academic range of programmes. With around 29,000 students (18% international) TU Dresden is the largest university in Saxony. It enjoys an outstanding national and international reputation for research in natural and engineering sciences.

One of the most prominent characteristics of TU Dresden is its dynamic development – a process that has been going on for years and will continue into the future. As a "synergetic university", TU Dresden closely cooperates with external research institutions as well as cultural, industrial, and social organisations. Students also benefit from interdisciplinary collaboration with a focus on practical outcomes. Teaching and research follow the principle of involving both students and graduates into current research early on.

RWTH Aachen University

RWTH Aachen University is one of the Germany's elite universities and one of the most highly recognised technical universities in Europe. It is a place where the future of our industrialised world is thought out. The university is proving to be a hotspot with increasing international recognition where innovative answers to global challenges are developed.

International students at RWTH Aachen University come from 141 countries.

With 260 institutes in nine faculties, RWTH Aachen University is one of Europe's leading institutions for science and engineering research. During the winter semester 2023/24, there were 45,284 students enrolled in 173 courses of study. Education at RWTH Aachen is application oriented, resulting in its graduates becoming young professionals and leaders that are highly sought after in the economy. RWTH Aachen University receives the most third-party research funding in engineering out of all German universities.

Indian Institute of Technology Madras IITM

IITM is a public technical university located in Chennai, Tamil Nadu, India. It is one of eight public Institutes of Eminence of India. As one of

the Indian Institutes of Technology (IITs), IIT Madras is also recognised as an Institute of national importance.

Founded in 1959 with technical and financial assistance from the former government of West Germany, it was the third Indian Institute of Technology established by the Government of India. IIT Madras is consistently ranked as the #1 university in both overall as well as engineering institute in India by the Ministry of Education's National Institutional Ranking Framework since the inception of the NIRF ranking system in 2016.



University location

Dresden, Germany

The capital of the Free State of Saxony, Dresden, stands majestically on the river Elbe. The fourth-largest city by area in Germany, Dresden is home not just to riverside palaces, Baroque churches and world-class museums but also to a proud history of science and technology. This finds continuity into the present with the DRESDEN-concept, an alliance of 37 research institutions in and around Dresden, of which TUD is a proud and prominent member. Whether you are interested in theatre, opera, cabaret or cinema, or if you enjoy a stroll through museums or a night out at the pub, Dresden has something to offer for everyone. Students also get an opportunity to be active in the many sports facilities in Dresden, including TU Dresden's own, or in the surrounding nature of the Elbe landscape, the Elbe Sandstone Mountains (Elbsandsteingebirge) or the Ore Mountains (Erzgebirge). The surroundings of the city have plenty to offer and the city is an excellent hub from where to explore Berlin, Prague, Leipzig, and Wrocław.

Aachen, Germany

Aachen is located at the northern foothills of the High Fens and the Eifel Mountains. It sits on the Wurm River, a tributary of the Rur, and together with Mönchengladbach, it is the only larger German city in the drainage basin of the Meuse. It is the westernmost larger city in Germany, lying approximately 61 km (38 mi) west of Cologne and Bonn, directly bordering Belgium in the south-west and the Netherlands in the north-west. With the highest elevation in the European Netherlands and the three-country point on its summit, the Vaalserberg is located within Aachen's city limits. The city lies in the Meuse–Rhine Euroregion and is the seat of the district of Aachen (Städteregion Aachen).

Chennai, India

Chennai, capital of Tamil Nadu state, southern India, located on the Coromandel Coast of the Bay of Bengal. Chennai is located on the Coromandel Coast along the Bay of Bengal. The Cooum (Koovam) River flows through its centre and the Adyar River through its southern portion. The Buckingham Canal runs parallel to the coast, joining the Kortalaiyar (Kosasthalaiyar) River in the northern edges of the city and the Muttukadu Backwaters south of the city.

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🌐 Course website: <https://abcd-centre.org/master-program/>

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🌐 <https://de.linkedin.com/school/tu-dresden/>

📷 <https://www.instagram.com/tudresden>

📺 <https://www.youtube.com/TUDresdenTV>

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Disclaimer

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