



Deutscher Akademischer Austauschdienst  
German Academic Exchange Service



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# Master's degree



## Air Quality Control, Solid Waste, Waste Water Process Engineering

University of Stuttgart • Stuttgart



## Overview

|   |   |
|---|---|
| Degree  | Master of Science   |
| In cooperation with   | Universidade Federal do Paraná (UFPR) in Curitiba, Brazil (A Master's double degree programme can be offered for those who are interested.)   |
| Teaching language   | <ul style="list-style-type: none"><li>English</li></ul>   |
| Languages   | The programme also offers electives and key qualifications modules in the German language for students who possess sufficient German language proficiency.  |
| Full-time / part-time   | <ul style="list-style-type: none"><li>full-time</li></ul>   |
| Programme duration  | 4 semesters   |
| Beginning   | Winter semester   |
| Additional information on beginning, duration and mode of study | Our Master's Programme starts each October (winter semester) on-site.   |
| Application deadline  | <p>The MSc WASTE programme has two application periods, the first one for EPOS-DAAD scholars and the second one for regular applicants.</p> <ul style="list-style-type: none"><li>Application period for EPOS-DAAD scholars*:<br/>1 August to 30 September each year</li><li>Application period for self-financed studies:<br/>15 November to 15 February each year</li></ul> <p>Further information concerning application procedures and deadlines can be found on our website <a href="https://www.waste.uni-stuttgart.de/">https://www.waste.uni-stuttgart.de/</a>.</p> |

\*Keep in mind that applications for EPOS-DAAD require two years of professional relevant experience. You can find more information about the scholarship programme on the following website: <https://www.daad.de/en/information-services-for-higher-education-institutions/further-information-on-daad-programmes/epos/>.

|  |   |
|--|---|
| Tuition fees per semester in EUR         | Varied  |
| Additional information on tuition fees   | EU citizens do not pay tuition, whereas non-EU citizens pay a tuition of 1,500 EUR per semester.  |
| Combined Master's degree / PhD programme | No  |
| Joint degree / double degree programme   | Yes   |
| Description/content                      | <p>The Air Quality Control, Solid Waste and Waste Water Process Engineering (<a href="#">WASTE</a>) Master of Science programme is a four-semester international English-taught programme at the University of Stuttgart.</p> <p>In the first semester, students attend five out of six compulsory modules (advanced modules) concentrating on the fundamentals of environmental and process engineering. These modules lay the foundations for the specialised areas and lectures of the second and third semesters.</p> <p>In the second semester, students attend the sixth compulsory module and choose two out of three specialised areas: Air Quality Control, Solid Waste, or Waste Water Process Engineering. Each specialised area consists of one core module, two elective modules, and practical work or an industrial internship. Depending on the individual study plan, additional elective modules, a student research project and/or an industrial internship can be taken in the second and third semesters as well.</p> <p>The individual study plan enables students to develop their professional profiles in accordance to their own interests and needs. Furthermore, it allows them to either broaden their studies or to specialise. The modules are supplemented by excursions and practical work within the research facilities of the university institutes. An adviser ensures that each individual programme is efficient and goal-oriented.</p> <p>The fourth semester is dedicated to the Master's thesis, which can be done at the University of Stuttgart, at a company, or at another university/research facility.</p> <p>Students without prior German language proficiency have to participate in German courses throughout the programme. If students are exempt from the German language courses, other interdisciplinary module(s) with equivalent credits have to be taken instead. These can be selected out of a broad catalogue of key qualifications. Students who are proficient in German may also choose additional electives taught in German.</p> <p>Upon successful completion of the programme, students will be awarded a Master of Science degree (MSc).</p> <p>Additionally, it is possible for the students to conduct the second year of studies within the frame of a double degree programme with the Universidade Federal do Paraná in Brazil.</p> |

## Course Details

### Course organisation

The first two semesters are accompanied by German language classes.

During the first semester, all students attend five compulsory modules (advanced modules), which include the fundamentals of process and environmental engineering.

#### 1. Module: Thermodynamics and Fluid Dynamics

- Thermodynamics of Fluid Mixtures
- Flow with Heat Transfer

## 2. Module: Pollutant Formation and Air Quality Control

- Chemistry and Physics of Combustion
- Basics of Air Quality Control

## 3. Module: Chemistry and Biology for Environmental Engineers

- Inorganic Chemistry
- Organic Chemistry
- Biology and Ecology of Water, Soil and Air Systems
- Technical and Medical Microbiology for Engineers

## 4. Module: Sanitary Engineering

- Solid Waste Management
- Waste Water Technology

## 5. Module: Technology Assessment and Presentation Techniques

## 6. German as Foreign Language I

In the second semester, two modules are mandatory:

### 1. Module: Process Engineering

- Mechanical Process Engineering
- Thermal Process Engineering

### 2. German as Foreign Language II

Students also choose two out of the three specialised areas. Each area consists of one core module, two elective modules and practical work or an industrial internship. The following core modules must be attended for each specialised area:

- **Air Quality Control:** Firing systems and flue gas cleaning or Measurement of air pollutants
- **Solid Waste Process Engineering:** Biological, mechanical and thermal waste treatment
- **Waste Water Process Engineering:** Urban drainage and design of wastewater treatment plants

Additional elective modules must be chosen in the second and third semesters. Some examples of the elective modules include the following:

- Air Quality Management
- Basics of Membrane Technology
- Biological Waste Air Purification
- Chemistry of the Atmosphere
- Engine Combustion and Emissions
- Industrial Internship (optional)
- Industrial Waste and Contaminated Sites
- International Waste Management
- Introduction to Numerical Simulation of Combustion processes
- Modelling and Simulation of Technical Combustion Systems
- Modelling and Simulation of Turbulent Reaction Flows
- Operational Technology for Waste Treatment
- Practical Work in Air Quality Control
- Primary Environmental Technologies and Emissions Reduction at selected Industrial Processes
- Sanitary Engineering – Practical Class
- Sustainable Production Processes
- Student Research Project
- Water Quality and Treatment

You can find a detailed list of the course descriptions in our [module handbook](#). The fourth semester is dedicated to the Master's thesis.

|   |   |
|---|---|
| <b>A Diploma supplement will be issued</b>                  | Yes   |
| <b>International elements</b>                               | <ul style="list-style-type: none"> <li>• International guest lecturers</li> <li>• Language training provided</li> <li>• Training in intercultural skills</li> <li>• Study trips</li> <li>• International comparisons and thematic reference to the international context</li> </ul> |
| <b>Integrated internships</b>                               | An optional industrial internship can be included in the study plan, either as a part of the specialised areas or the advanced modules.   |
| <b>Special promotion / funding of the programme</b>         | <ul style="list-style-type: none"> <li>• DAAD development-related postgraduate course</li> </ul>  |
| <b>Course-specific, integrated German language courses</b>  | Yes   |
| <b>Course-specific, integrated English language courses</b> | No  |

## Costs / Funding

|   |   |
|---|---|
| <b>Tuition fees per semester in EUR</b>   | 1,500 EUR   |
| <b>Additional information on tuition fees</b>   | EU citizens do not pay tuition, whereas non-EU citizens pay a tuition of 1,500 EUR per semester.  |
| <b>Semester contribution</b>  | Approx. 200 EUR per semester  |
| <b>Costs of living</b>  | Living expenses amount to about 940 EUR per month. You will have to demonstrate that you have sufficient finances to cover your living expenses for 12 months. EU citizens may apply for state-guaranteed loans during the time of enrolment. For more information, see the links on our websites.  |
| <b>Funding opportunities within the university</b>                                    | Yes   |
| <b>Description of the above-mentioned funding opportunities within the university</b> | <p>You can finance your studies through the EPOS-DAAD programme.<br/> <a href="https://www.daad.de/en/information-services-for-higher-education-institutions/further-information-on-daad-programmes/epos/">https://www.daad.de/en/information-services-for-higher-education-institutions/further-information-on-daad-programmes/epos/</a></p> <p>If you are not eligible for the EPOS-DAAD programme, the University of Stuttgart offers additional information about financial aid and scholarships: <a href="#">Financial aid and scholarships   University of Stuttgart (uni-stuttgart.de)</a></p> |

## Requirements / Registration

### Academic admission requirements

The following admission requirements must be met:

- Bachelor's or equivalent degree in chemical, civil, environmental, mechanical, process engineering or in a related field

EPOS-DAAD applicants must fulfil additional requirements:

- Minimum of two years of professional experience after the Bachelor's programme (Internships during a Bachelor's programme are not accepted.)

### Language requirements

A TOEFL (CBT) score of 213 points or equivalent test results (e.g., TOEFL iBT 88 or TOEFL PBT 550, IELTS band 6.5) as proof of sufficient knowledge of English

Minimum German level: A2 according to the Common European Framework of Reference for Languages (CEFR)

International students without prior knowledge of German must attend the intensive German language course in September (free of charge).

### Application deadline

The MSc WASTE programme has two application periods, the first one for EPOS-DAAD scholars and the second one for regular applicants.

- Application period for EPOS-DAAD scholars\*:  
1 August to 30 September each year
- Application period for self-financed studies:  
15 November to 15 February each year

Further information concerning application procedures and deadlines can be found on our website <https://www.waste.uni-stuttgart.de/>.

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### Submit application to

Please follow the application procedure stated on our website: <https://www.waste.uni-stuttgart.de/>.

We are looking forward to receiving your application!

Best regards,  
Your MSc WASTE office team

## Services

### Possibility of finding part-time employment

Please be aware that it may be very challenging to finance your whole studies by working. Non-EU citizens are allowed by law to work for a maximum of 120 days per year. Only students who are employed by the university in one of the institutes or departments ("Studentische/Wissenschaftliche Hilfskräfte") are exempt from this regulation, but other restrictions may apply.

For detailed information, please consult our websites:

[International Students: financing your studies](#) and [Working during your studies](#).

### Accommodation

Both the campus in Stuttgart-Vaihingen and the campus in the centre of Stuttgart have on-site halls

of residence. Dorm rooms (ranging from 240 to 350 EUR per month) are furnished. Some are equipped with a sink, and all have access to kitchen and sanitary facilities, telephone and Internet. From the campus in Stuttgart-Vaihingen, the city of Stuttgart can be reached by suburban railway within ten minutes.

#### Support for international students and doctoral candidates

- Welcome event
- Buddy programme
- Tutors
- Accompanying programme
- Cultural and linguistic preparation
- Pick-up service
- Specialist counselling
- Visa matters
- Help with finding accommodation
- Support with registration procedures

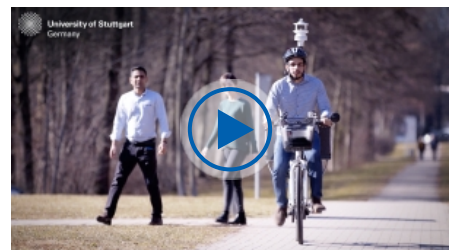


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#### Kumar Narasimhan - India MSc

After completing the MSc WASTE programme, I spent time in different industries, starting with market engineering to study markets for environmental engineering and renewable energy, followed by a long period setting up medium-scale and large-scale biogas plants with cattle manure as feedstock. These experiences have enabled me to provide the entrepreneurial skills that SRF was looking for. I proudly write this testimonial about the MSc WASTE community, and I would also like to thank them.

#### Our Partners



#### The Master's programme WASTE at the University of Stuttgart

Get an insight into the MSc programme "Air Quality Control, Solid Waste and Waste Water Process Engineering (WASTE) – in just 120 seconds. Two students from the University of Stuttgart explain what is special about this programme and why they chose Stuttgart.

» more:  
<https://youtu.be/jNLQcYcaQP4>

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# University of Stuttgart

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Photo: University of Stuttgart / Regenscheit

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### **Intelligent systems for a sustainable society**

The University of Stuttgart is one of the leading technically oriented universities in Germany with global significance. Located centrally in an economically strong region with vast cultural integration, the university sees itself as a hub of university-based, extramural and industrial research. Furthermore, it takes a role as a leader in research-based teaching, focused on quality and holism. The university is dedicated to researching and strengthening the interfaces between technology, society and culture in an interdisciplinary manner, defined as the "Stuttgart Way". This means the integration of engineering, natural sciences, humanities and social sciences based on the fundamentals of cutting-edge research at a disciplinary level.

### **Excellent research and teaching**

The University of Stuttgart implements innovative concepts in research and teaching in order to provide knowledge and strategies for a meaningful and sustainable development. It focuses on basic research that is both knowledge-oriented and application-related. To facilitate this research, the university is actively part of regional, national and international research networks.

The university is committed to the principle of unity between research and teaching. Students acquire knowledge, expertise and the power of judgement, in accordance with the guidelines of scientific research and awareness. The university fosters fascination for the sciences, supporting its students and junior researchers at all stages of their careers. It promotes independent thinking and provides an environment for responsible action. In doing so, it educates individuals into exceptional experts who think in an integrative and global manner and act responsibly in the sciences, economics and society.

### **A powerful region**

Founded in 1829, at the beginning of the Industrial Age, the University of Stuttgart continues to prepare the way for innovation within an economically and scientifically powerful region and contributes to the economic success and prosperity of our society. This process combines the requirements of a social and cultural change, which allows an early and extensive input of social interests in research and design as well as teaching and further education.

### **Open-mindedness**

The University of Stuttgart stands for open-mindedness, individuality and community spirit. It brings together students that are eager to learn, highly motivated employees, outstanding teachers, and excellent researchers as well as visionary thinkers and inventors. By means of its culture of integration, the university creates and conveys knowledge for shaping the future of our society.



## **📍 University location**

The University of Stuttgart is nestled in one of Europe's most vibrant industrial regions. This fosters many forms of interdisciplinary collaboration – for instance, in numerous Collaborative Research Centres (also known as CRC or sometimes CRC/TRR) and in application-



oriented research assignments. The University of Stuttgart sets up a close relationship and a successful transfer of knowledge and technology between its research institutions and business enterprises in the region and beyond. This very practical orientation benefits research and teaching. At the same time, economic players profit from rapid access to new scientific knowledge and contact to experts in their specialised fields. There are numerous possibilities of collaboration for businesses. Furthermore, the university also maintains a close relationship with non-university research institutions such as the Max Planck Society, the Fraunhofer Society, the German Aerospace Center and the German Literature Archive Marbach. Thus, the optimal prerequisites for cutting-edge research at the highest level are all to be found in Stuttgart.

## Contact

### University of Stuttgart

Institute of Combustion and Power Plant Technology (IFK)

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70569 Stuttgart

Tel. +49 71168568947

✉ [cd-waste@ifk.uni-stuttgart.de](mailto:cd-waste@ifk.uni-stuttgart.de)

🌐 Course website: <https://www.waste.uni-stuttgart.de/>

📘 <https://www.facebook.com/mscswaste/>

🐦 [https://twitter.com/Uni\\_Stuttgart](https://twitter.com/Uni_Stuttgart)

🌐 <https://www.linkedin.com/in/m-sc-waste-04b226184/>

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

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# International Programmes in Germany - Database

[www.daad.de/international-programmes](http://www.daad.de/international-programmes)  
[www.daad.de/sommerkurse](http://www.daad.de/sommerkurse)

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## GATE-Germany

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## Disclaimer

The data used for this database was collected and analysed in good faith and with due diligence. The DAAD and the Content5 AG accept no liability for the correctness of the data contained in the "International Programmes in Germany" and "Language and Short Courses in Germany".

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