M.Sc. Laboratory Animal Science
FELASA Specialist in Lab Animal Science
Accreditation
The M.Sc. Laboratory Animal Science is a two year, part-time study course. A blended learning concept, incorporating e-learning with attendance blocks, enables participants to receive the highest level of academic and practical training whilst limiting time away from home and work.

In the first three semesters, twice weekly webinars are held outside regular office hours. These webinars are supported by an e-media skills lab and further complemented by literature reviews and homework. At the end of each of these semesters there is a compulsory 10 day attendance block in Aachen, Germany. The fourth semester is dedicated to the completion of a scientific master thesis.

Each attendance block incorporates two weekends and the working week and provides practical and clinical skill training under expert supervision, group discussions, case studies and excursions to leading laboratory animal science facilities.

- Independently plan, conduct, evaluate and improve animal experiments, generating scientific data to the highest standards using specialist knowledge and the latest methodology.
- Ensure that the 3Rs and EU directive 2010/63 are central in the planning and design of experiments and that alternatives to animal experiments are considered.
- Receive an accredited M.Sc. qualification from a leading University for access to a wide range of careers in Biomedicine.
- Access to a network of internationally renowned specialists.
- Study a broad range of species, from rodents to non-human primates.

Successful graduates are awarded the academic title Master of Science (M.Sc.) by RWTH Aachen University. 90 ECTS credit points are attributed to this program. Additionally, graduates will receive the FELASA certificate LAS specialist (including EU functions A, B & D). Veterinarians licensed in Germany can apply for 483 ATF points from the German Federal Veterinary Chamber.

There is acute demand from industry, research institutions and regulatory authorities for highly skilled personnel to lead and manage their laboratory animal research activities in a highly competent manner. Graduates of this M.Sc. program will be well equipped to take on leading roles and will be highly sought after. Furthermore, graduates of the RWTH Aachen, one of Germany's Universities of Excellence, are highly regarded by employers.

- Legal certification as a scientist, physician, veterinarian or an equivalent qualification
- Sufficient relevant work experience
- Proof of English language skills

"The amount of topics and gathered practical experience during the attendance blocks exceeded my expectations."

"This course exceeded my expectations. The opportunity to apply comprehensive theoretical knowledge to state-of-the-art practice made it a true experience. I recommend this course to everybody interested in a career in laboratory animal science."
<table>
<thead>
<tr>
<th>Winter Semester (1st)</th>
<th>20 CP</th>
<th>Summer Semester (2nd)</th>
<th>23 CP</th>
<th>Winter Semester (3rd)</th>
<th>17 CP</th>
<th>Summer Semester (4th)</th>
<th>30 CP</th>
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<tbody>
<tr>
<td>Ethics and Philosophy; National and International Law</td>
<td>7 CP</td>
<td>Regulatory Affairs: OECD, ICH, FELASA, GV-SOLAS, REACH</td>
<td>8 CP</td>
<td>Regulatory Affairs: Pre-clinical and clinical studies, approval of Medical Products, Pharmaceuticals and Biologicals</td>
<td>4 CP</td>
<td>Architecture and Facility Design, Financial, Hygiene and Quality Management</td>
<td>4 CP</td>
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<tr>
<td>Biostatistics and Biometrics</td>
<td>4 CP</td>
<td>Design and Evaluation of Animal Experiments</td>
<td>3 CP</td>
<td>Applied Anesthesia and Microsurgery; Medical Technology and Imaging</td>
<td>5 CP</td>
<td>Applied Pharmacology: Applied Toxicology</td>
<td>5 CP</td>
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<td>Genetics and Breeding; Anatomy and Physiology</td>
<td>6 CP</td>
<td>Replacement, Supplementation and Alternatives to Animal Experiments</td>
<td>5 CP</td>
<td>Anesthesia and Experimental surgery</td>
<td>4 CP</td>
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<tr>
<td>Pathology and Diseases</td>
<td>3 CP</td>
<td>Biochemistry, Hematology and Molecular Biology in Biomedicine</td>
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<td>Animal Models in Biomedical Research</td>
<td>4 CP</td>
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**Attendance block I:**
- Handling, labelling, sampling, application in various animal species
- Reproductive techniques, in vitro fertilization, DNA- and ES cell injection, cryopreservation
- Health monitoring and pathology & histopathology
- Excursion to the German Primate Center
- Discussion of ethical aspects, national and international law

**Attendance block II:**
- *In silico, in vitro and ex vivo* methods as alternatives to animal experiments
- Molecular biology & biochemistry (PCR, ELISA, WB, XTT-Assay)
- Genotyping of genetic modified animals
- Hematology and clinical chemistry
- Aquatic animal models
- Media training (Development of teaching modules, public relations)

**Attendance block III:**
- Sterilization techniques (H₂O₂, workshop, steam sterilization)
- Site visits to animal facilities
- Basics in surgery: Instruments, suture materials and techniques
- Anesthesia and experimental surgery in various animal species
- Microsurgery in rats
- Medical Technology & Imaging: PET, MRT, Ultrasound
- Pharmacology and Toxicology
- Workshop on preclinical drug/medical device development

**Master Thesis** 28 CP

**Colloquium** 2 CP

“My favourite part of MLAS was really the practical week in every semester, where all the students had the chance to put everything into practice, from alternative in vitro experiments to experimental surgery. This was only possible due to a perfect organization of the practical units by the responsible tutors, and their vast experience in the procedures.”

“The overarching education and the intensity of the course contents completed my knowledges about the topic of animal based research, not only due to the webinars but especially due to the practical courses and its hands-on training.”
Scientific Directors
RWTH Aachen University
Prof. Dr. René H. Tolba
PD Dr. Julia Steitz

Lecturers & Guest Lecturers
RWTH Aachen University
Prof. Dr. Dr. Dominik Groß
PD Dr. Nicole Heussen
Prof. Dr. Ralf-Dieter Hilgers
Prof. Dr. Henner Hollert
Prof. Dr. Wilhelm Jahnen-Dechent
Prof. Dr. Stefan Jockenhövel
Prof. Dr. Fabian Kiessling
Dr. Babette Kögél
Prof. Dr. Twan Lammers
Prof. Dr. Ute Lindauer
Prof. Dr. Christian Martin
Prof. Dr. Ulrich Steinseifer

German Cancer Research Center (DKFZ), Heidelberg
Prof. Dr. Kurt Reifenberg

German Primate Center (DPZ)
Leibniz Institute for Primate Research, Göttingen
Dr. Kerstin Mätz-Rensing

Max Planck Institute of Biochemistry, Munich
Dr. Heinz Brandstetter

University of Cologne
Prof. Dr. Branko Zevnik

University of Veterinary Medicine
Vienna, Austria
Prof. Dr. Thomas Rülicke

Hannover Medical School
Prof. André Bleich, PhD

University Maastricht,
The Netherlands
Dr. Andreas Teubner

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Judith van Luijk, PhD

University of Kiel
Prof. Dr. Gerhard Schultheiß

Philippus University of Marburg
Dr. Cornelia Exner

Saarland University,
Homburg
Jun.-Prof. Dr. Daniela Yildiz

University of Zürich, Switzerland
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Paulin Jirkof, PhD

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