LABORATORY ANIMAL MEDICINE

Graduate Program Head
Ronald P. Wilson

Program Code
LAM

Campus(es)
Hershey (M.S.)

Degrees Conferred
Master of Science (M.S.)

The curriculum of this training program includes:

- Credits of course work at the 500 or 600 levels.

To earn the master's degree, each student must complete at least 30

The Department of Comparative Medicine is a basic science, academic
department of the College of Medicine. It is concerned with the range of
variation of normal and abnormal structure, function, and behavior in a
variety of species of animals used for teaching, testing, and research. Its
faculty, staff, and students work in a multidisciplinary and collaborative
fashion with all other departments in the college to advance the research
mission.

Graduate study in laboratory animal medicine consists of advanced
training in biology, medicine and methodology pertinent to animal-based
research, and the development of scholarship and research capabilities
within the specialty. The general plan is one that provides a broad, basic
foundation upon which the individual can build a career in teaching and
research and/or in the professional direction of research animal facilities.

Admission Requirements
Applicants apply for admission to the program via the Graduate School
application for admission (https://gradschool.psu.edu/graduate-admissions/how-to-apply/). Requirements listed here are in addition to
Graduate Council policies listed under GCAC-300 Admissions Policies
(https://gradschool.psu.edu/graduate-education-policies/).

Degree Requirements
Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies
listed under GCAC-600 Research Degree Policies (https://gradschool.psu.edu/graduate-education-policies/).

To earn the master's degree, each student must complete at least 30
credits of course work at the 500 or 600 levels.

The curriculum of this training program includes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CMED 501</td>
<td>Biology and Care of Laboratory Animals</td>
<td>3</td>
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<tr>
<td>CMED 503</td>
<td>Laboratory Animal Genetics</td>
<td>3</td>
</tr>
<tr>
<td>CMED 507</td>
<td>Techniques of Laboratory Animal Experimentation</td>
<td>3</td>
</tr>
<tr>
<td>CMED 515</td>
<td>Experimental Surgery of Laboratory Animals</td>
<td>3</td>
</tr>
<tr>
<td>CMED 530</td>
<td>Diseases of Laboratory Animals I</td>
<td>3</td>
</tr>
<tr>
<td>CMED 531</td>
<td>Diseases of Laboratory Animals II</td>
<td>3</td>
</tr>
<tr>
<td>CMED 535</td>
<td>Comparative Pathology</td>
<td>3</td>
</tr>
<tr>
<td>CMED 590</td>
<td>(1 credit per semester)</td>
<td>4</td>
</tr>
<tr>
<td>CMED 596</td>
<td>Individual Studies</td>
<td>1-3</td>
</tr>
<tr>
<td>BMS 591</td>
<td>Biomedical Research Ethics</td>
<td>1</td>
</tr>
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</table>

Culminating Experience

Students completing a thesis enroll in CMED 600; students in the
non-thesis option enroll in CMED 596.

<table>
<thead>
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<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMED 600</td>
<td>Thesis Research (for M.S. thesis)</td>
<td>9</td>
</tr>
<tr>
<td>or CMED 596</td>
<td>Individual Studies</td>
<td></td>
</tr>
</tbody>
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Total Credits
36-38

1 A non-thesis option may be elected by the student but must be
approved in writing by the Program Director. A scholarly paper on a
topic relevant to the fields of laboratory animal medicine or laboratory
animal science must be written and presented. Up to 9 credits of
independent study (CMED 596) may be earned for this work.

2 The submission and defense of a thesis based on an original
hypothesis-driven research project is required. A minimum of 9 credits
of thesis research (CMED 600) are required (a maximum of 6 credits
may receive a quality grade).

Students may, with the approval of the Program Director, enroll in
graduate level courses offered at the Penn State College of Medicine,
Penn State Harrisburg, University Park, or Penn State's World Campus.

Minor

A graduate minor is available in any approved graduate major or dual-
title program. The default requirements for a graduate minor are stated
in Graduate Council policies listed under GCAC-600 Research Degree
Policies (https://gradschool.psu.edu/graduate-education-policies/) and
GCAC-700 Professional Degree Policies (https://gradschool.psu.edu/
graduate-education-policies/), depending on the type of degree the
student is pursuing:

- GCAC-611 Minor - Research Doctorate
- GCAC-641 Minor - Research Master's
- GCAC-709 Minor - Professional Doctorate
- GCAC-741 Minor - Professional Master's

Student Aid

Graduate assistantships available to students in this program and other
forms of student aid are described in the Tuition & Funding (https://
gradschool.psu.edu/graduate-funding/) section of The Graduate School's
website. Students on graduate assistantships must adhere to the course
load limits (https://gradschool.psu.edu/graduate-education-policies/
gsad/gsad-900/gsad-901-graduate-assistants/) set by The Graduate
School.

Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899.
Advanced undergraduate courses numbered between 400 and 499 may
be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Comparative Medicine (CMED) Course List (https://bulletins.psu.edu/university-course-descriptions/graduate/cmed/)

Learning Outcomes
1. **KNOW:** Demonstrate appropriate breadth and depth of knowledge of husbandry, veterinary care, pathology, and colony management of species of animals commonly used in biomedical research.
2. **APPLY/CREATE:** Apply knowledge of laws, regulations, guidelines, and position statements concerning the use of animals in biomedical research to common research activities and scenarios.
3. **APPLY/CREATE:** Apply knowledge of anesthesia and analgesia of animal species used in biomedical research to critical evaluation of IACUC protocols, development of recommendations for prevention of pain and distress, and veterinary medical management of surgical procedures.
4. **APPLY/CREATE:** Apply knowledge of adult learning theory and education methodology to the design and execution of techniques training for researchers and other teaching activities.
5. **APPLY/CREATE:** Apply knowledge of research ethics, experimental design, techniques, data management, and data analysis to create new knowledge connected to the field of laboratory animal science and/or other biomedical science disciplines.
6. **COMMUNICATE:** Demonstrate a variety of methods for communicating scientific information, including formal presentations, discussion facilitation, written abstracts, written manuscripts, and poster presentations.
7. **THINK:** Critically evaluate published research in the field of laboratory animal science and biomedical research disciplines in order to practice evidence-based laboratory animal medicine, support animal welfare, and support the research mission.
8. **PROFESSIONAL PRACTICE:** Practice veterinary medicine in accordance with the highest ethical standards, values, and best practices for the recognized veterinary specialty of laboratory animal medicine.

Contact

**Campus**  
Hershey Med Ctr

**Graduate Program Head**  
Ronald Paul Wilson

**Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)**  
Tiffany Lynn Whitcomb

**Program Contact**  
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**Program Website**  
View (http://med.psu.edu/laboratory-animal-medicine-ms/)