

## COURSE SYLLABUS

### Laboratory Animal Medicine and Research

CVM 7045

2 Credit Hours/2 Week Course

**Course Director:** Diane McClure, DVM, Associate Professor, Laboratory Animal Medicine

**Office Location:** BVCC building, Room 236, Western University Campus

**Contact Number:** 909-706-3798 (O), 805-698-9940 (C)

**Email address:** [dmccclure@westernu.edu](mailto:dmccclure@westernu.edu)

**Course Instructors:** Clinical Preceptors are:

Richard Ermel. DVM; MVPH; PhD; DACLAM. City of Hope, Duarte, CA. e-mail: [RErmel@coh.org](mailto:RErmel@coh.org) Phone: 626-301-8270  
Greg Lawson DVM; DACLAM. University of California, Los Angeles, CA. e-mail: [glawson@mednet.ucla.edu](mailto:glawson@mednet.ucla.edu) Phone: 310-794-2571  
David Wolf DVM, PhD, Loma Linda University, Loma Linda, CA. e-mail: [dewolf@llu.edu](mailto:dewolf@llu.edu) Phone: 909-558-1000 ext 145087

#### Course Time and Location:

Course work schedule is at the discretion of the Clinical Preceptor but will be from 7:00/8:00 am- 4:00/5:00 pm. Students will participate in this 2 week course in groups of 2-4 at one of the following sites:

- City of Hope, 1500 Duarte Road, Duarte, CA 9101
- Loma Linda University, 11202 Benton Street, Loma Linda, CA 92357
- University of California Los Angeles, Lab Animal Division, 924 Westwood Boulevard, Los Angeles, CA 90024

#### Course Description: (Course Purpose, aims/goals)

This two week course provides an introduction to laboratory animal veterinary medical practice. Primary laboratory animal species are identified as rodents, ferrets, rabbits, and non-human primates and students are expected to understand individual and population based medical aspects for these species. This includes basic husbandry, biostatistics (handling, restraint, injection sites and diagnostic sample collection), assessment of animal well-being and major diseases (etiology, pathogenesis, diagnosis, treatment, health surveillance methods, prevention and zoonotic risks). Animal facility management relating to animal care, biosecurity, occupational health and safety will be addressed. Students will become familiar with local, state and Federal regulations governing research animal care and use in order to understand the critical role the veterinarian plays in ensuring regulatory compliance.

At the end of this course students will understand the role of veterinarians in biomedical research and have developed an educated opinion of the role of research in furthering the practice of veterinary medicine.

Students are expected to work in groups and actively apply problem based learning (PBL) techniques to every case they encounter.

#### Learning Issues: (Supporting The Course Purpose)

At the end of this course, students are expected to be able to:

1. Define the role of the laboratory animal veterinarian in overseeing the care and welfare of research animals.
2. Be familiar with career options in laboratory animal medicine and biomedical research and be able to locate specialists in the field, if consultation is needed.
3. Know how to handle and restrain animals safely and humanely, provide common methods of treatments, and obtain diagnostic specimens.
4. Review the basic biology and care of mice, rats, hamsters, Guinea pigs, ferrets, rabbits, non-human primates.
5. Discuss the principles of management, housing and environment of laboratory animals including aspects of occupational health and safety, health maintenance, biosecurity and biocontainment in laboratory animal colonies.
6. Assess laboratory animal well-being, recognize and minimize pain and distress.
7. Diagnose, clinically and at necropsy, major diseases (e.g. bacterial, viral, parasitic, etc.) of mice, rats, hamsters, Guinea pigs, ferrets, rabbits, non-human primates.
8. Offer appropriate advice on management strategies, treatment, and prevention of major diseases and

- zoonotic risks related to these species.
9. Identify and explain the laws, regulations, and guidelines affecting local institutional oversight for animal use in teaching, research, and testing. Describe the Animal Welfare Act administered by the USDA (APHIS-Regulatory Enforcement of Animal Care) and the Public Health Service Policies on the humane care and use of Laboratory Animals.
  10. Describe the functions and duties of the Institutional animal Care and Use committee (IACUC).
  11. Describe how the American Association for Accreditation of Laboratory Animal Care (AAALAC) accredits research facilities.
  12. Describe and also how institutional policies are developed and how laboratory animals are monitored in terms of care, health and usage.
  13. Evaluate the selection of an animal model for a research, teaching or testing purpose using the principles of laboratory animal welfare and biomedical models including consideration of alternative methods to refine, replace or reduce the number of animals used in research.
  14. Understand the role of research in furthering the practice of veterinary medicine.

**Course Policies and Procedures:** (Attendance/Dress Code etc. – specific to course)

**Class attendance** - Attendance and participation is required in order to optimize the educational benefit for all students. For details about attendance policy and all other policies and/or logistical issues related to 3<sup>rd</sup> year course, please refer to the Clinical Courses and Rotations Handbook.

**Communication with course director:** In order to address issues in a timely manner, e-mail (using the Western University server and e-mail account) and phone calls are to be the official means of communication.

**Professional behavior** – Professional behavior is conducive to a learning environment and is expected of all course participants. Professional behavior includes, but is not limited to, tolerance of other's beliefs and opinions, ability to communicate effectively, demonstrating respect for instructors, zoo staff and classmates, arriving on time, and being prepared for scheduled activities.

**Honor code** – In compliance with the University and College requirements and recommendations. Students need to review this information in the Western University Current Catalog and the Third Year Student and Clinical Preceptor Information in the Clinical Courses & Rotations Handbook

**Students with special needs** - Students seeking accommodations based on disabilities should contact the Center for Disability Issues & the Health Professions (CDIHP) office (909 469-5380) to coordinate reasonable accommodations for students with documented disabilities *prior to the beginning of the course*. Retroactive disabilities related accommodations will not be granted.

**Dress Code** - Wear normal work clothes, with closed toed shoes. Students may be required to wear Personal Protective Equipment (PPE) during the day, for example: disposable gloves, face mask/respirator, lab coat or coveralls, head cover, etc.

**Case Logs/Clinical Skills Documentation** - Clinical Skills are also documented in association with each case log. Be sure to complete this section as it provides you with a record of skills performed and the College uses this to document clinical skills acquisition for accreditation purposes.

**Assessment:** (Grades/Rubric/Exam)

The grade awarded for the course CVM 7050 will be based on the following:

**1. 20% Assessment by Clinical Preceptor**

The Clinical Preceptor will assess the student's medical and surgical interest, professional curiosity, and willingness to fully participate in the management of cases. This evaluation will be based on the following criteria:

This will be evaluated based on the following rubric:

1. The student demonstrated a basic understanding of the laws, regulations, and guidelines affecting laboratory animal medicine and institutional animal care and use programs.
2. The student demonstrated a basic understanding of the Institutional Animal Care and Use Committee (IACUC)-membership and responsibilities/role.
3. The student demonstrated a basic understanding of an occupational health and safety program as part of the overall care and use program.
4. The student demonstrated a basic understanding and appreciation of key role and complexity of a preventive health care program in Laboratory Animal Medicine.
5. The student adequately presented a clinical case and/or selected topic pertaining to laboratory

animal medicine and addressed relevant questions.

6. The student's conduct was appropriate and professional (Dress, on time, language, concern for animal welfare, etc.).
7. The student exhibited appropriate problem solving skills and approach.
8. The student was involved, interested and self directed.
9. The student demonstrated appropriate communication skills (with doctors, staff, and possibly clients).
10. The student demonstrated and applied basic knowledge and technical skills for appropriate species and appropriate for his/her stage of development.

**Course Subject Knowledge**

N/A- Not Applicable	<b>1-Rarely:</b> Very problematic, area of grave concern. Performance is consistently poor for a 3 <sup>rd</sup> year veterinary student.	<b>2- Occasionally:</b> Performance needs improvement. Student has not yet gained personal command of the skill.	<b>3- Most of the time:</b> Performance of skill meets requirements; it is a good, solid performance, done most of the time as normally expected of a 3 <sup>rd</sup> year student.	<b>4- Almost always:</b> Performance of skill often exceeds expectations, is consistently excellent (i.e. above average) for a 3 <sup>rd</sup> year veterinary student.
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**2. 20% Performance product**

Performance product is a mock IACUC Protocol submission and review process and consisting of three parts:

1. **Animal Model Selection Essay:** The student shall write an essay (A4 format, 1 page 750 word document) which compares two animal models or one animal model and one alternative method in the context of a research proposal addressing a human disease (student's choice). This critical evaluation should include at least one vertebrate model and conclude by advocating the selection of one model over another. The document is to be written in the student's own words with proper citation noted in the text of the paper – students should review the WU CVM Academic Misconduct Policy and PowerPoint on Blackboard: "How to Avoid Plagiarism Rev by Pat Vader Western U Library 2008.ppt". This paper should not have been previously submitted to any other course including this course. The paper is **due by 8 am on the first Saturday in the course**, to be submitted to the course director via e-mail, using the student's official Western University e-mail account. Students are encouraged to run the paper through the Turnitin® software which can be accessed on Blackboard.
2. **IACUC Protocol Submission:** The student will document complete an IACUC Protocol using the animal model selected in part 1. The research can be original or derived from a current publication. The protocol is **due by 7 pm on the second Wednesday** in the course, to be submitted to the course director and rotation peers via e-mail, using the student's official Western University e-mail account.
3. **IACUC Protocol Review:** The student will participate in the Lab Animal Rotation IACUC meeting (a Mock IACUC scheduled by the participants prior to the end of the rotation) and review the IACUC protocols submitted in part 2. Each student will serve as the primary veterinary reviewer for one protocol. Each student will provide a summary of the protocol review comments and Lab Animal Rotation IACUC discussion and decisions. The IACUC protocol review summary and conclusion should be submitted to the protocol author and to the course instructor via e-mail, using the student's official Western University e-mail account. It is **due by 8 am the Monday after the rotation is completed**.

**3. 60% Theoretical Knowledge and application of knowledge (Multiple choice, short answer format)**

A 2 hour written summative exam will be conducted during the assessment week at the end of the 8-week block. Questions for the written exam (100 points) are selected based on the case logs, Power Point Presentations from students that completed the course before midterm and final exams respectively, several relevant articles provided through Blackboard, The student will also be tested on the following items:

1. Review the basic biology, care, and important diseases (e.g. bacterial, viral, parasitic, etc.) of common (rats, mice, rabbits, non-human primates) laboratory animal species.
2. List and explain the laws, regulations, and guidelines affecting laboratory animal medicine and science, and the principles of laboratory animal welfare, and biomedical models. Describe the Animal Welfare Act administered by the USDA (APHIS-Regulatory Enforcement of Animal Care) and the Public Health Service Policies on the humane care and use of Laboratory Animals.
3. Assess the justification for using animals in research and teaching.
4. Understand biosafety, which encompasses occupational health and safety and zoonotic diseases of common laboratory animal species.
5. Explore the career options in laboratory animal medicine and biomedical research

6. Describe current management strategies for dealing with common disease diagnoses in laboratory animal colonies, including rodents, guinea pigs, hamsters, rabbits, primates.
7. Describe how vertebrate animals are used for testing, research, and training.
8. Describe how laboratory animals are monitored in terms of care, health and usage.
9. Discuss the principles of health maintenance and biocontainment in laboratory animal colonies.
10. Understand the principles of management, housing and environment of laboratory animals.
11. Describe how the American Association for Accreditation of Laboratory Animal Care accredits research facilities and also how institutional policies are developed.
12. Be aware of alternate methods for research, testing and training designed to reduce the number of animals used in research.
13. Understand the role of research in furthering the practice of veterinary medicine.
14. Critically evaluate the veterinary medical literature involving the experimental use of animals.

**Seminar:** Students completing the course at City of Hope will present a case at the end of the course.

Time: 20 minutes maximum

Maximum of 15 minutes for presentation

Maximum of 5 minutes for question

Content: Based on clinical case assignments in 1<sup>st</sup> few days of course, students are expected to concentrate the talk on 2 or more of the following:

1. Clinical history
2. Morphologic changes (gross and histological lesions)
3. Differential diagnoses
4. Diagnostic tests
5. Prevention/treatment

**IMPORTANT: In order to pass the course, the student must submit the following to the Course director via e-mail:**

1. A digital copy of the PowerPoint presentation given during the rotation at the lab animal site.
2. Case log of cases seen during the rotation: The student is responsible for maintaining a daily log of the cases seen during her/his experience at the Lab Animal Facility (available online on BanWeb, and submitted at the end of course to the course director). Clinical Skills are also documented in association with each case log. Be sure to complete this section as it provides you with a record of skills performed and the College uses this to document clinical skills acquisition for accreditation purposes.
3. Completion of all three parts of the IACUC Protocol Submission and Review:
  - a. **Animal Model Selection:** A essay (A4 format, 1 page 750 word document) which compares two animal models or one animal model and one alternative method in the context of a research proposal addressing a human disease (student's choice) *due by 8 am on the first Saturday in the course.*
  - b. **IACUC Protocol Submission:** Completed IACUC Protocol *due by 7 pm on the second Wednesday* in the course.
  - c. **IACUC Protocol Review:** The IACUC protocol review summary and conclusion *due by 8 am on the Monday after the rotation is completed.*

At the end of the 2-week rotation, you will be expected to provide an assessment of the Clinical Preceptor and the clinical site:

#### **Course Evaluation**

Surveys are conducted regularly for all CVM courses to gather student opinion and observation on course content and conduct, and faculty and/or course director performance. This data helps improve instruction in the College curriculum, and survey outcomes are part of the College assessment program for accreditation purposes. Accordingly, it is expected that each student will complete, as scheduled, all surveys requested for this and other courses. This is a 'threshold' requirement for every College course, that is, a student has not formally completed any course until its survey obligations are met. It may be necessary to withhold a final course grade if there is a failure to comply with survey obligations. Your input is needed to make continual improvement in the course, which will affect your education experience and that of classes that follow you. The evaluation is to be done using the form on One45.

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**Grading Scale:** \_\_\_\_\_

- **A** ( $90 \geq$ ) a student with work at professional advanced level with evidence of understanding of all course material
- **B** (80-90) a student who has achieved a high standard of understanding in some topics, although in some areas and issues have moderate understanding
- **C** (70-79) a student who has achieved a moderate level of understanding in the majority of topics
- **D** (65-69) a student who has achieved fair understanding in a few topics and rudimentary understanding in the majority of the major learning areas
- **U** ( $<$ ) a student who has failed to demonstrate an understanding of the learning areas