

COURSE SYLLABUS

Zoo Animal and Wildlife

CVM 7050

2 Credit Hours/2 Week Course

Course Director: Janis Ott Joslin DVM; Professor, Zoo and Wildlife Medicine

Office Location: VMC building, Room 226, Western University Campus

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Course Instructors: Clinical Preceptors are:

Los Angeles Zoo:

- Dr. Curtis Eng, DVM, Director of Animal Health; Curtis.Eng@lacity.org as well as other LA Zoo Veterinarians and others as needed. 323-644-6018 (hospital main line)
- Jill Werner, Hospital Keeper, Jill.Werner@lacity.org is the Western University liaison. 323-644-6018 (hospital main line)

Phoenix Zoo

- Dr. Dean Rice, DVM, Executive Vice President of Interpretation, Exhibition and Science; drice@thephxzoo.com 602-273-1341 (main zoo line)
- Dr. Julie Swenson, DVM, Staff Veterinarian, jswenson@thephxzoo.com is the Western University liaison. 602-273-1341 (main zoo line)
- Dr. Kathy Orr, DVM, Staff Veterinarian, korr@thephxzoo.com 602-273-1341 (main zoo line)

Additional site to be determined

Course Time and Location:

Course work schedule is at the discretion of the Clinical Preceptor but will, depending on the site, be from 7:00/7:30/8:00 am-4:00/5:00/6:00 pm. Students will participate in this 2 week course in groups of 2-4 at one of the following sites:

Students will participate in this 2 week course, which will take place at one of the following sites:

- Los Angeles Zoo, 5333 Zoo Drive, Los Angeles, CA 90027. Because of special issues pertaining to the care of zoo animals, working hours at the Zoo are Monday to Sunday. A regular working week for the students consists of 40 hrs/week (10 hrs/day for 4 days with a starting time of 7:30am; there may be some days depending on the cases that will run more than 10 hours).
- The Phoenix Zoo, 455 N Galvin Pkwy, Phoenix, Arizona 85008. Working hours will be Monday thru Friday, hours will be determined by the preceptor.
- Additional site to be determined

Course Description: (Course Purpose, aims/goals)

This course is two weeks in duration and provides an introduction to veterinary practice in the field of zoo and wildlife medicine and surgery. Through participation in the daily activities of the veterinary staff at the selected institution, the students will acquire basic knowledge in a variety of clinical, surgical, and managerial skills. Emphasis will be placed on management (husbandry), transport, handling, restraint, capture, anesthesia, internal medicine, emergency and critical care, necropsy techniques and appropriate specimen collection in variety of zoo animals. Students are expected to dedicate a portion of their time to student-centered learning activities determined by the group of students attending the course.

In addition to seeing clinical cases, sessions with a clinical veterinarian are set aside to discuss anatomy/physiology of non-domestic animals, journal discussion, Zoo ethics, introduction to the management of zoos and conservation efforts of zoos. Specific time is set aside for learning issue discussion as well.

Due to the nature of the animals at the zoo, the Attending Veterinarian or the Clinical Preceptor will decide, on a case by case basis, the degree of student involvement allowed in the diagnostic and therapeutic management of patients so in some medical cases the student will not get to handle and physically examine the animal and the students are encouraged to use observational skills during this rotation. However, students are expected and highly encouraged to actively participate in the diagnostic and therapeutic problem-oriented decision-making of each particular case. Issues pertaining to the conservation of wildlife may be discussed depending upon the students' interest and staff availability.

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 the course, the student is expected to:

1. Identify the essential duties of a zoo/wildlife veterinarian
2. Recognize potential areas of research that will benefit wild and zoo animal species.
3. Recognize the differences in veterinary care when applied to Zoo/Wild/Exotic animals in confinement and free-ranging species.
4. Apply basic veterinary medical knowledge in the management and treatment of zoo/wildlife/exotic animal species.
5. Recognize anatomical and physiological differences between one or more exotic animal and common domestic species.
6. Identify common medical issues (e.g. bacterial and parasitic enteric infections, trauma, lameness, geriatric medical problems, nutritional problems, etc.) in the practice of Zoo/Wildlife/Exotic animal veterinary medicine
7. Understand the limitations associated with the capture, restraint, diagnosis and treatment of medical conditions in zoo animals.
8. Demonstrate an understanding of specialized physical and chemical restraint techniques used in Zoo/Wildlife and Exotic Animal Medicine.
9. Understand the purpose of quarantine and be able to describe and analyze the quarantine protocols in a zoo setting
10. Identify biosafety issues in Zoo settings
11. Identify public health issues regarding the presence of potential zoonotic diseases in Zoo/Wildlife/Exotic populations.
12. Be aware of epidemiological principles as they apply to zoo populations.
13. Become familiar with the resources available to the zoo veterinarian for the management of clinical cases.
14. Be familiar with Federal and State regulations as they relate to zoo and wild populations.
15. Understand the roles of veterinary personnel, biologists, zoologists, nutritionists, curators and trainers at the Zoo in the management strategies for captive species
16. Understand the role of zoo veterinarians in conservation efforts
17. Describe the role that Zoos, wildlife parks and aquariums play in modern society
18. Describe how zoos contribute to the management of endangered species.
19. Understand the ethical issues facing zoos
20. Understand the animal welfare issues involved in zoo 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 the 3rd 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.

Course Equipment and Clothing - Students must wear appropriate clothing. Students should wear sturdy shoes such as hiking boots or tennis shoes. No open toed shoes should ever be worn. In accordance to the LA Zoo policies, students can dress in casual but professional attire such as cargo pants and scrub shirts. During the warm summer months it is okay to wear respectable shorts but keep in mind that zoo work can sometimes be rough and whenever possible students should wear pants.

1. It is mandatory that students bring a dedicated pair of shoes to be left on zoo grounds during their zoo rotation. These shoes should not be worn off zoo grounds and can be stored at the Zoo's health center. Students can bring

these shoes home when done with the rotation.

2. Students should bring rain gear.
3. Coveralls and work boots will be provided as needed, although we recommend students bring their own due to limited sizes.
4. Students should have a set of surgical scrubs.
5. Students should wear their Western University name tags at all times so that any zoo staff can easily identify them.
6. Students should not wear loose jewelry (necklaces, dangling earrings, loose watches or bracelets) that could be caught on equipment or machinery or grabbed by an animal.
7. Hair should be worn so as not to expose the student to entrapment and injury.
8. Computers & communication links to remote resources are recognized as being integral to the educational experience. There have been some difficulties at the site with getting access to prospective wireless networks at the Animal Health Center so there are three computers available for students to use on site.

Zoo Policies and Procedures - Students will be responsible for the following:

- 1) Students are to always remain quiet, calm and respectful when working around the animals and the animal keepers.
- 2) Many of the areas where the student will be visiting are restricted areas. Students are never to enter an animal area, animal enclosure, keeper area or approach an animal without direct supervision and specific permission from veterinary personnel or that animal's keeper.
- 3) Students are never to handle, anesthetize or administer any drug to an animal without specific direction from the veterinary personnel assigned to them.
- 4) Students must respect the privacy of the veterinary/client relationship. As such, students will be privy to information that the public doesn't know and students must be discreet about information that they share from the zoo.
- 5) Students can take pictures only for personal and educational usage. Commercial or for profit usage of images of LA Zoo animals is prohibited. Before taking pictures, students need to ask permission from the veterinarian or technician before taking the picture. Posting of pictures on websites such as My Space is prohibited. All video taking is strictly prohibited.
- 6) Students are responsible for helping to keep common areas neat and cleaning up after themselves.
- 7) At the Los Angeles Zoo, the students will have three computers with internet access to use. It is very important to make sure all computers are shut down at the end of the day.
- 8) Students cannot bring friends or family members to the zoo during their assigned course time and they should not bring friends or family members to the Los Angeles Zoo Animal Hospital or The Phoenix Zoo Animal Care Center at any time.

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 of the Student's Performance by the Clinical Preceptor(s)** All the staff veterinarians who had contact with the student will provide input on the assessment of the student's performance. The combined average of all the veterinarians will be used for grading purposes. The veterinarians and the Clinical Preceptor will also assess the student's medical and surgical interest, professional curiosity, and willingness to fully participate in the discussions. This evaluation will be based on the following criteria:
 - a) The student demonstrated the ability to identify learning issues and clinical problems in zoo animals, applying basic anatomical and physiological principles of domestic animals towards exotic zoo animals when applicable.
 - b) The student utilized zoo and exotic based scientific references and animal resources when researching clinical cases, pulled the relevant information from these resources and applied them appropriately to the case.
 - c) The student was able to clearly and concisely communicate medical information with their preceptors, classmates and hospital staff.
 - d) The student demonstrated an understanding of the challenges and limitations associated with the capture, restraint, diagnosis and treatment of animals in a zoo setting compared to that of private practice.
 - e) The student demonstrated an understanding of the role of zoos in society and associated ethical issues and the role of veterinarians in zoos and conservation efforts.
 - f) The student's conduct was appropriate and professional. (Dress, on time, language, concern for animal welfare, etc).
 - g) The student exhibited appropriate problem solving skills and approach.
 - h) The student was involved, interested and self directed
 - i) The student demonstrated appropriate communication skills (with doctors, staff, and possibly clients).
 - j) The student demonstrated and applied basic knowledge and technical skills for appropriate species and appropriate for his/her stage of development.

This will be evaluated based on the following rubric:

Course Subject Knowledge

N/A- Not Applicable	1-Rarely: Very problematic, area of grave concern. Performance is consistently poor for a 3 rd year veterinary student.	2- Occasionally: Performance needs improvement. Student has not yet gained personal command of the skill.	3- Most of the time: Performance of skill meets requirements; it is a good, solid performance, done most of the time as normally expected of a 3 rd year student.	4- Almost always: Performance of skill often exceeds expectations, is consistently excellent (i.e. above average) for a 3 rd year veterinary student.
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2. **20% Clinical Preceptor's evaluation of a Power Point Presentation at the site.** This is a 10 minute presentation (PBL format) of a case description containing the outcome and follow-up. The presentation should include the application of the PBL principles through lists of facts, ideas, plans (with justification), learning issues, case development and outcome. The concluding slide should include a brief case summary and the acknowledgments.

The time and place for this presentation is determined by the Clinical Preceptor (usually Thursday afternoon of the second week). The presence of the course director and interested parties at the LA Zoo is highly encouraged, but not mandatory.

3. **10% Student essay on one of the following topics shared among the group members on one of the following topics:** (A 750 word document in the students own words with proper citation noted in the text of the paper. This paper should not have been previously submitted to any other course including this course – students should review the WU CVM Academic Misconduct Policy and the PowerPoint on Blackboard: "How to Avoid Plagiarism Rev by Pat Vader Western U Library 2008.ppt"). Students are encouraged to run the paper thru the Turnitin® software which can be accessed on Blackboard.

1. Zoo Animal Veterinarians vs. private Veterinary Practitioners
2. Zoonotic diseases in Zoo/Wildlife/Exotic animal species
3. Foreign animal diseases and Zoo/Wildlife/Exotic animal imports
4. Diagnostic challenges in Zoo Animal Medicine (for example how to interpret results for animals for which there are no normal values established and how to treat them given that there are no approved drugs for them and correct doses are not know, etc.)
5. Significance of quarantine procedures in zoo settings
6. Immobilizations drugs and physical restraint methods unique to zoo/wildlife/exotic animal medicine and the potential risks involved

4. **50% of the course grade will come from a 2 hour written summative exam** that 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 first three blocks of the four block course before midterm and final exams respectively, required readings at the zoo and these are also posted on Blackboard. Questions will consist of short answer, short essay, multiple choice or true/false. The student will also be tested on the following items:

1. The student will be able to describe the essential duties of a zoo veterinarian
2. The student will be able to describe potential areas of research the will benefit wild and zoo animals.
3. The student can describe the differences in veterinary care when applied to Zoo/Wild/Exotic animals in confinement and free-ranging species
4. The student will be able to describe how basic veterinary medical knowledge can be applied in the management and treatment of zoo/wildlife/exotic animal species.
5. The student will be able to apply basic anatomical and physiological principles of domestic animals towards exotic zoo animals.
6. The student will be able to identify common medical problems seen in zoo animals
7. The student will be able to describe the limitations associated with the capture, restraint, diagnosis and treatment of medical conditions in zoo animals.
8. The student will be able to describe the use of immobilizations drugs and physical restraint methods unique to zoo/wildlife/exotic animal medicine
9. The student will be able to describe the quarantine protocols for incoming animals in a zoo setting.
10. The student will be able to describe biosafety issues in a zoo setting
11. The student will be able to identify public health issues and the potential zoonotic diseases in Zoo/Wildlife/Exotic populations
12. The student will be able to describe how epidemiological principles apply to management of zoo populations
13. The student will be capable of utilizing non-traditional reference sources when researching clinical cases.
14. The student will be able to identify the Federal and State regulations as they relate to zoo animals.
15. The student will be able to describe the roles of veterinary personnel, zoologists, nutritionists, geneticists, curators, keepers, etc. at the Zoo and in the management of zoo animals.
16. The student will be able to describe the role of the zoo veterinarian in conservation efforts

17. The student will be able to describe the role that Zoos, wildlife parks and aquariums play in modern society
18. The student will be able to discuss the role that zoos play in the management of endangered species
19. The student will be able to discuss the ethical issues facing zoos
20. The student will be able to describe animal welfare issues involved in zoo and wildlife veterinary medicine.

IMPORTANT: In order to pass the course, the student must complete the following:

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 Zoo (available online on BanWeb). 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.

In addition, in order to pass the course, the student must also submit the following to the Course director via e-mail (Deadline: Monday after the rotation is completed at 8:00 AM):

1. A copy of the PowerPoint presentation (the 10 minute presentation (PBL format) of a case description containing the outcome and follow-up that was given during the rotation)
2. A copy of the PowerPoint or Handout on Anatomy and Physiology talk (please include your notes in your PowerPoint presentation)
3. Written Essay as indicated above as Assessment 3 (A 750 word document) on one of the topics listed above
4. At the end of the 2-week rotation, you will be expected to provide an assessment of the Clinical Preceptor and the clinical site and the course:

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.

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

Course Schedule:

At the Los Angeles Zoo:

Students will be divided into three groups of 2 students. Each student will have two "contact days" where they shadow the veterinarian and two study days a week and a keeper shadowing opportunity. All students will attend morning rounds each day they are at the Health Center.

Fifty per cent of the students' time (i.e. 20 hours/week) is spent on observation, clinical analysis, case discussion, and participation in daily activities of the Zoo veterinary staff. The other 50% is dedicated to student-centered learning activities determined by the group of students attending the course. This self-directed activity occurs on site at the LA Zoo Animal Health Center library. Independent, individual study is expected during non-scheduled days. Please note that some students will be having scheduled time on Saturdays and Sundays, and non-scheduled days during the week. Re-adjusting of the schedule due to personal needs requires the mutual agreement of the Course Director, Clinical Preceptor and group members. The current schedule for the course/rotation will be posted on Blackboard. On Thursdays of the second week there will be a mandatory session for all the students to attend for the students PowerPoint presentations.

Students are expected to give two presentations. The first is a minor presentation to the other students on the anatomy/physiology of an exotic species of their choice, focusing primarily on what is clinically relevant. The second presentation is the 10 minute timed presentation for the staff veterinarians on a medical learning issue pertaining to zoo medicine

In addition to the predetermined PBL discussions relating to learning issues, students are expected to participate in a journal discussion from an article on exotic animal medicine, a discussion on Introduction to Zoos, Conservation of animals discussion and Zoo ethics.

Please note that some of the cases and discussions may require student's participation during extended hours beyond the scheduled time.

At The Phoenix Zoo:

The schedule at the Phoenix Zoo will be given to the students prior to or on the day of their arrival at the zoo.

Fifty per cent of the students' time (i.e. 20 hours/week) is spent on observation, clinical analysis, case discussion, and participation in daily activities of the Zoo veterinary staff. The other 50% is dedicated to student-centered learning activities determined by the group of students attending the course. This self-directed activity occurs on site at The Phoenix Zoo Animal Care Center library. Independent, individual study is expected during non-scheduled days. The current schedule for the course/rotation will be posted on Blackboard.

Students are expected to give two presentations. The first is a minor presentation to the other students on the anatomy/physiology of an exotic species of their choice, focusing primarily on what is clinically relevant. The second presentation is the 10 minute timed presentation for the staff veterinarians on a medical learning issue pertaining to zoo medicine

In addition to the predetermined PBL discussions relating to learning issues, students are expected to participate in a journal discussion from an article on exotic animal medicine, a discussion on Introduction to Zoos, Conservation of animals discussion and Zoo ethics.

Please note that some of the cases and discussions may require student's participation during extended hours beyond the scheduled time.

Resources:

- Dierauf, L., Guiland, F.M.D. (eds.) 2001. Handbook of Marine Mammal Medicine, 2nd ed. CRC Press, Boca Raton, FL.
- Fowler, M.E. 1998. Medicine and Surgery of South American Camelids 2nd ed. Iowa State University Press. Ames, IA.
- Fowler, M.E. 1995. Restraint and Capture of Domestic and Wild Animals. Iowa State University Press. Ames, IA.
- Fowler, M.E. (ed.) 1986, 1993, 1999, 2003, 2007 Zoo and Wild Animal Medicine, 2nd, 3rd, 4th, 5th and 6th editions. WB Saunders, Philadelphia, PA.
- Fowler, M.E., Mikota, S.K. (eds.). 2006. Biology, Medicine, and Surgery of Elephants, Blackwell Publishing. Ames, IA.
- Friend, M., Franson, T.C. (eds.). 1999. Field Manual of Wildlife Diseases: General Field Procedures and Diseases of Birds. USDI/U.S. Geological Survey, Washington, DC.
- Fudge, A.M. (ed.). 2000. Laboratory Medicine. Avian and Exotic Pets. W.B. Saunders Co., Philadelphia PA.
- Mader, D.R. (et al.) 1996, 2006. Reptile Medicine and Surgery, 1st and 2nd edition. W.B. Saunders Co., Philadelphia, PA.
- McArthur, S., Wilkinson R., Meyer J. 2004. Medicine and Surgery of Turtles and Tortoises. Iowa State University Press, Ames, IA.
- Redig et al. 1993. Raptor Biomedicine. University of Minnesota Press, St. Paul, MN.
- Ritchie, BW, Harrison, GJ, Harrison, LR. 1994. Avian Medicine: Principles and Application. Wingers Publishing, Lake Worth, FL.
- Altman, et al. 1997. Avian Medicine and Surgery. WB Saunders, Philadelphia, PA.
- Harrison Lightfoot. 2006. Clinical Avian Medicine 2 volume set. Spix
- Noga, EJ. 2000. Fish Disease: Diagnosis and Treatment. Iowa State University Press, Ames, IA.
- Stoskopf, M. (ed.) 1988. Tropical Fish Medicine. Veterinary Clinics of North America, Small Animal. W.B. Saunders, Philadelphia, PA.
- Stoskopf, M. (ed.) 1993. Fish Medicine. WB Saunders, Philadelphia, PA.
- Thomas, NJ, Hunter, DB, Atkinson, CT. 2007. Infectious Diseases of Wild Birds. Blackwell Publishing Professional, Ames, IA.
- Wobeser, GA. 1998. Diseases of Wild Waterfowl, 2nd Edition. Plenum Press, New York, NY.
- Wobeser, GA. 2005. Essentials of Diseases in Wild Animals, Blackwell Publishing Professional, Ames, IA.
- Williams, E.S., Barker, I.K. (eds.). 2001. Infectious Diseases of Wild Mammals, 3rd ed. Iowa State University Press, Ames, IA.
- Wright KM, Whitaker BR. 2001. Amphibian Medicine and Captive Husbandry. Krieger, Melbourne, FL.
- Rubel, GA et al, 1991, Atlas of Diagnostic Radiology of Exotic Pets, Wolfe Publishing Limited, London, England.
- West, G, Heard, D, and Caulkett, N, 2007, Zoo Animal and Wildlife Immobilization and Anesthesia, Blackwell Publishing, Ames, Iowa
- Carpenter, J, 2005, Exotic Animal Formulary, 3rd Ed., Elsevier Saunders, St. Louis, Missouri
- Hillyer, EV and Quesenberry, KE, 1997, Ferrets, Rabbits and Rodents, WB Saunders, St. Louis, Missouri
- Journals: Journal of Zoo & Wildlife Medicine, Journal of Wildlife Diseases, Avian Diseases, Avian Pathology, Journal of Avian Medicine and Surgery, The Veterinary Clinics of North America: Exotic Animal Practice, Aquatic Mammals, Diseases of Aquatic Organisms, Journal of Aquatic Animal Health, Journal of Fish Diseases, Marine Mammal Science, Zoo Biology, Comparative Pathology, Veterinary Pathology, Journal of Herpetological Medicine and Surgery, Seminars in Avian and Exotic Pet Medicine, American Journal of Veterinary Research, Copeia, Herpetological Review, Journal of Herpetology, Journal of the American Veterinary Medical Association, Conservation Biology, Emerging Infectious Diseases, Journal of Wildlife Management, OIE Revue Scientifique et Technique

Appendices: (Detailed Schedules/Assessment rubrics/University, College Information/Forms/Surveys etc.)

