

**COURSE SYLLABUS**  
**Wildlife Diseases 11:216:469 (3 credits)**

**Instructor:** Dr. Michael Sukhdeo

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**Course Prerequisites:** [ 11:119:101 and 11:119:102], or [11:119:115 and 11:119:116], or [11:704:101].

**Course Description:** Diseases of wildlife will be examined with emphasis on causes and mechanisms of disease, pathobiology of disease, and epidemiology and population significance of disease. Broad categories of wildlife diseases will be covered with an emphasis on the evolutionary strategies of viruses, bacteria, and parasites. The implications for management and conservation strategies will be debated.

**Learning Goals:**

- 1) How natural selection works.
- 2) How pathogens cause disease.
- 3) The role of evolution in shaping pathogen strategies.

**Text:** Essentials of Disease in Wild Animals by Gary Wobeser. 2006. Blackwell Publishing

**Course Requirements/Assignments:** There will be two (2) midterm examinations held during class hours. There will be one (1) final examination held during the appropriate Rutgers University scheduled time during finals week.

**Grading Standards/Examinations:** Midterm and final examinations generally will be short answer or/and short essay format. The final examination will be cumulative. The questions will cover material covered in class, as well as require knowledge and synthesis of the subjects discussed in class. A term paper of 10 double spaced pages including at least 5 cited references is due at the end of the term. Students are encouraged to submit drafts of their term paper for editorial comments (only until 3 weeks before they are due).

**Pop Quizzes:** Quizzes will be given at random times during the semester.

*N.B. there will be **no** makeup quizzes or exams without a doctor's note or a funeral notice.*

Random pop quizzes	10%
Midterm 1	20%
Midterm 2	20%
Final	30%
Term Paper	20%

**Learning Goals:**

1. Identification of important diseases of wildlife, including diseases transmissible between humans,

- domestic animals, and wildlife.
2. Understanding the evolution of pathogens and their hosts.
  3. Understanding proximate mechanisms of pathogenesis in infectious diseases.
  4. Understanding epidemiological principles and models of disease spread in populations.
  5. Integrating wildlife diseases into principles of wildlife management and conservation.

**Lecture Schedule: subject to change (Chapters are from the textbook)**

- Week 1 Introduction to basic concepts of disease (Chapters 1, 2, 3)
- Week 2 Detecting, describing and measuring Disease (Chap 4)
- Week 3 Bacteria (readings from primary literature)
- Week 4 Viruses (readings from primary literature)
- Week 5 Parasites (readings from primary literature)
- Week 6 Pathogenicity and Host Defences (Chapters 5,6)
- Week 7 Transmission and Perpetuation of Disease in Populations.
- Week 8 Effects of Disease on Populations (Chapter 11)
- Week 9 Environmental Interactions (readings)
- Week 10 Evolutionary constraints – The Arm’s Race
- Week 11 Zoonotic Diseases (Chapter 12)
- Week 12 Disease in Wildlife Management and Conservation (Chapters 13, 14)
- Week 13 Review

**Assessment Plan**

Student achievement and learning will be assessed based on three essay exams.

**Sample essay questions:**

Describe ecological factors that might contribute towards the virulence of a pathogen?

Why are wildlife management program slow to adopt pathogen surveillance methods?

What factors influence the ecological and economic costs of wildlife diseases?

How might parasites affect the success of marine or terrestrial conservation programs?

What should the owners of domestic animal herds know about wildlife diseases?

Describe differences in the evolutionary responses of hosts to highly specific versus generalist parasites.