

ZOO4926 | **Behavioral Drivers of Disease** | Spring 2019

Catalog Description

This course aims to introduce students to the ways in which host behavior can influence infection risk and transmission potential of parasites. We will investigate how host behavior influences disease, how parasites can manipulate host behavior, and how host-parasite interactions are studied across levels of biological organization (individuals, social groups, populations, communities). We will cover diseases of wildlife, domesticated animals, and humans, and will use an integrative perspective on how human diseases are connected to wildlife and the environment.

Credits: 3 credit hours

Pre-requisites and Co-requisites

N/A

Course Objectives

By the end of the course, students will be expected to:

- Understand common relationships between host behavior, disease risk, and transmission potential
- Make predictions regarding the types of diseases likely to affect hosts based on their behavioral traits, including co-evolutionary dynamics
- Interpret and critique the primary literature on behavioral disease ecology
- Use social network analyses to quantify host social behaviors and infer infection risk

Instructor Information

Name: Nick Keiser

Office location: Carr Hall 622A

E-mail address: ckeiser@ufl.edu

Office hours: Thursdays at 12:30PM

Course Meeting Times

Tuesday: period 3 (9:35AM - 10:25AM) & Period 4 (10:40AM - 11:30AM)

Thursday: period 3 (9:35AM - 10:25AM)

Course Meeting Location(s): TBA

Textbooks or Other Readings

There are no required textbooks. Readings will be made available on Canvas.

Grading

- Readings: 50 points total
- Assignments: 50 points total
- Poster presentation: 50 points
- Exams: Midterm (50 points) and Final (50 points), 100 points total
- Class Participation: 50 points
- **TOTAL:** 300 points

Course schedule:

Date	Topic
Jan 8	Introduction to Class
Jan 10	History of Infectious Disease Ecology
Jan 15	Meeting the cast: Hosts
Jan 15	Primer on Animal Behavior
Jan 17	Variation in behavior: From individuals to populations
Jan 22	Meeting the cast: Prokaryotic/viral disease-causing agents
Jan 22	Meeting the cast: Eukaryotic disease-causing agents
Jan 24	Who gets infected?
Jan 29	Transmission
Jan 29	Transmission heterogeneity
Jan 31	Behavior and the microbiome
Feb 5	Host movement behavior and disease
Feb 5	Host foraging behavior and disease
Feb 7	Host social behavior and disease
Feb 12	Social Networks: Individual metrics
Feb 12	Social Networks: Global metrics
Feb 14	GUEST LECTURE
Feb 19	Host defenses: Behavior and eco-immunology
Feb 19	Medicinal behavior
Feb 21	MIDTERM EXAM
Feb 26	Parasite manipulation of host behavior: Part 1
Feb 26	Parasite manipulation of host behavior: Part 2
Feb 28	GUEST LECTURE
Mar 4-8	SPRING BREAK
Mar 12	Host sex and disease (Hamilton-Zuk Hypothesis)
Mar 12	Animal communication and disease
Mar 14	
Mar 19	Behavioral competence
Mar 19	Role of behavior in host-parasite coevolution
Mar 21	Cognition / learning behavior and disease
Mar 26	Multi-host pathogens and community ecology
Mar 26	Host jumps and zoonotic disease
Mar 28	GUEST LECTURE
Apr 2	CLASS VISIT TO KEISER LAB
Apr 4	Prep for student presentations
Apr 9	STUDENT PRESENTATIONS
Apr 11	Animal societies and disease
Apr 16	Behavior, conservation, and disease
Apr 16	GUEST LECTURE
Apr 18	Disease ecology and human health
Apr 23	Class Overview
Apr 25	Reading Day
TBD	FINAL EXAM