

NRSC-2233-001

Synopsis:

Neuroethologists study neural systems by combining behavior and neuroscience to understand the neural mechanisms that have evolved in various animals to solve particular problems encountered in their environmental niches. This comparative approach that emphasizes how information is processed and transformed by the brain is particularly powerful for gaining an understanding of systems neuroscience. In this course, you will learn core concepts in ethology, sensory systems, motor systems and neural plasticity and development by studying the behavior and computations performed by neural circuits of animals such as crickets, barn-owls, echolocating bats, electric fishes and songbirds. For example, in sensory systems, the study of sound localization in the Barn Owl allowed us to understand how analyzing the time differences and amplitude differences in the sound arriving at our two ears allow all animals including humans to localize sounds. The neural implementation of a circuit for computing interaural time delays was first discovered in the Owl. In this course, you will not only be introduced to the experimental analysis of natural animal behavior, and its neurobiological basis but learn common principles of systems neuroscience.

Prerequisite: NRSC 1110

Weekly essays: Every week I will post 1-2 essay questions on canvas based on the readings. You will compose a ~½ page typed (double spaced) answer to each assignment. You will upload your responses as a PDF to canvas and they will be graded by the TA. The lowest assignment grade will be dropped. If you miss the deadline for an assignment, you will receive a zero for that assignment, and that score can be dropped. Assignment dates are posted on canvas, it is your responsibility to know when they are due.

Quizzes

For the weekly quizzes you may use your notes, textbook, etc. to complete the quiz. You must complete the quiz **on-time** to receive credit. **There are no make-up or late quizzes.**

Grading:

3 Exams each worth 25%	75%.
Weekly Essay questions	15%
Quizzes	10%

Required Readings:

Behavioral Neurobiology: Gunther K.H. Zupanc, Oxford University Press. 2018.

Supplemental readings:

Supplemental readings will be posted on Canvas