

Prepared by the Department of Natural Sciences & Applied Technologies

Date of Departmental Approval: November 2, 2015

Date approved by Curriculum and Programs: April 14, 2016

Effective: Fall 2016

1. Course Number: BIO210/BIO210L

Course Title: Bird Biology/Bird Biology Laboratory

2. Description: This is an introduction to the biology of birds and their behavior. Special emphasis is given to species of the United States and Massachusetts. A wide range of topics is presented, including field identification by sight and sound; taxonomy; breeding biology; foraging ecology; feather structure; flight; migration and orientation; anatomy and physiology. (3 class hours/3 laboratory hours per week)

3. Student Learning Outcomes (instructional objectives, intellectual skills):

Upon successful completion of this course, students are able to do the following.

- Utilize current field and laboratory methods to study avian communities. Use appropriate techniques in the laboratory, collect and analyze meaningful data, and present a clearly and cogently written report (utilizing Standard American English).
- Identify and explain the differences between 27 avian taxonomic Orders. Present an oral report on an avian taxonomic Family.
- Work cooperatively in a small group setting to complete various laboratory exercises, following the written instructions provided.
- Write at least one formal research paper on a pertinent avian biology topic.
- Extract data from published databases and use that information to effectively communicate their findings in both written and oral formats. Use word processing, spreadsheet, and presentation software to prepare and present reports and lecture assessments.
- Compare the major theories behind avian migration and orientation.
- Demonstrate their ability to identify 75-100 local bird species by sight and approximately 50 species by sound.
- Synthesize information explaining current trends in avian biology (e.g., anatomy & physiology, migration, navigation, foraging ecology and breeding biology, and taxonomy).
- Be able to evaluate sources of information from authoritative websites and articles, based on knowledge acquired in the classroom.
- Manipulate, summarize, interpret and present data in the form of graphs and charts.
- Understand the major conservation challenges facing avian communities on a local, national, and global scale.
- Explain how changing environmental policies in the USA can impact the conservation of avian communities globally.
- Describe the conservation challenges that international avian migrants face with respect to land use, cultural attitudes and effects resulting from environmental pollution, in the USA and internationally.
- Understand the link between coffee production/consumption and bird conservation in the USA and internationally.

4. Credit(s): 4 credits

5. Satisfies General Education Requirement: Natural or Physical Science

6. Prerequisite(s): Grade of C or better in BIO151 (General Biology I) or ENV118 (Introduction to Environmental Science) or permission of the instructor,

7. Semester(s) Offered: Varies

8. Suggested General Guidelines for Evaluation:

- Weekly quizzes and Homework
- Oral Presentation
- 2, Hour Exams
- A Final Exam
- Laboratory

9. General Topical Outline (Optional):

General Outline of Topics to be Covered in Lecture

- I. Systematics
 - a. Taxonomy
 - b. Evolution
- II. Form and Function
 - a. Feathers
 - b. Flight
 - c. Physiology
 - d. morphology
- III. Behavior
 - a. Communication
 - i. Visual
 - ii. Vocal
 - b. Reproductive
 - i. Nests, clutch size
 - ii. Mates
 - iii. Growth, development, and parental care
 - c. Social
 - i. Annual cycles
 - ii. Molt
 - iii. Flocking behavior
 - d. Foraging ecology
- IV. Migration, orientation, and Navigation
 - a. Migration
 - i. Why migrate
 - ii. Patterns of migration
 - iii. Phenology
 - iv. Migratory feats
 - b. Orientation and Navigation
 - i. Visual Landmarks
 - ii. The solar compass
 - iii. The stellar compass
 - iv. Olfaction and geomagnetism
- V. Conservation Challenges
 - a. Development
 - b. Pollution
 - c. Coffee
 - d. Climate Change

General Outline of Topics to be covered in Laboratory

- I. Examples of the diversity of birds, topography
- II. Taxonomy
- III. Feathers
- IV. Skeletal-muscular systems
- V. Circulatory-respiratory systems
- VI. Identification
 - a. Sight
 - b. Sound