

In recent weeks, we have been witnessing one of the most dramatic changes that life on Earth ever experiences. Trillions of living cells have responded to the shortening day length and change in temperatures and are preparing for winter. The result is autumn color and the release of millions of tons of leaves from their branches to blanket the Earth. Less noticeable are the behaviors and physiological changes in invertebrates, reptiles, birds, and mammals as they prepare for winter or for migration. In a few weeks, a second blanket will cover parts of the Earth--snow is essential to the survival of winter-active animals, but there is much more interesting physiology within their warm little bodies.

A study of the physiological processes by which organisms adapt to these kinds of changes in their environment is the theme of the winter portion of Environmental Physiology and Ecology which I am preparing to teach again in Spring Semester, 2008. The course description is as follows:

BIO 3610 ENVIRONMENTAL PHYSIOLOGY and ECOLOGY -- 4 Hrs.

A study of both physiological ecology and field ecology. The course begins with field and laboratory studies of adaptations to winter at the organismic and cellular levels and includes a travel study experience in the "North Woods." Spring emphasis shifts to field ecology with emphasis on aquatic, forest, and prairie ecosystems. Three lectures and one 3-hour laboratory per week. Includes one 4-day weekend trip into the "north woods" and a Spring Saturday trip to Hocking County. [Trips will substitute for several weekly laboratories.]

Prerequisites: BIO 1120, BIO 2500, and BIO 2600

Topics:

- Organism and Environment
- Energy and Water Relationships/Metabolism
- The Snow Environment
- Plants in Winter--Freezing/Desiccation
- Animal Adaptations to Winter
- Plant-Animal Adaptations to Hot Arid Lands
- Spatial Data and Intro. to Geographic Information Systems (GIS)
- Forest Community in Spring
- History, Geology, and Ecology of Southern Ohio
- Tentative Syllabus, 2008 – Available Upon Request

General Aims:

1. Interdisciplinary integration -- physiology, morphology, ecology
2. A study of key biological concepts geared to the winter and spring seasons
3. Gain a broader global perspective – travel study of "North Woods" and Appalachian Plateau
4. Development of friendships through laboratory, field studies, and winter recreation

TEXTS:

- ▶ Peter .J. Marchand. 1996. *Life in the Cold: An Introduction to Winter Ecology*, 3rd ed. Univ. Press of New England, Hanover, NH. Supplemented with some assigned articles.
- ▶ Smith, R.L., T.M. Smith. 2001. *Ecology and Field Biology*, 6th ed. Benjamin Cummings.

If you have further questions, stop by or call #7948, or E-mail. More information is available at the course website at <http://www.cedarville.edu/academics/sciencemath/silvius/3610/3610main.htm>