Concentration in
Physiology and Organismal Biology

Physiology and organismal biology are broad, integrative, and overlapping disciplines that generally focus on the study of life above the cellular level. Physiology integrates molecular, cellular, systems, and whole-body functions of organisms. Related courses in the department mainly emphasize the study of vertebrates and provide a foundation for the understanding of the mechanical, physical, and biochemical basis of human physiology. Organismal biology focuses on the mechanisms that contribute to the form, function, and behavior of whole organisms. Courses in this area approach these subjects in an ecological and evolutionary context. The concentration offers opportunities to gain hands-on experience through upper-level electives that include a laboratory section (e.g., Human Anatomy, Human Physiology) or advanced experience courses (e.g., Vertebrate Biomechanics, Cancer as a Metabolic Disease). Additionally, research, mentoring, or teaching opportunities may be arranged with core faculty.

This concentration prepares students for a wide variety of career paths, including the perusal of advanced degrees in human and veterinary medicine and graduate research in ecology, evolutionary biology, and applied natural sciences. Graduates with this concentration may also pursue employment in an array of fields including animal science, biology education, biotechnology, wildlife and fisheries biology, exercise physiology, pharmaceutical/biotechnology research, natural resource management, or conservation.

GENERAL BIOLOGY COURSE REQUIREMENTS FOR THE BIOLOGY BS DEGREE

1. BIOL 2000 Molecules and Cells
2. BIOL 2010 Ecology and Evolution
3. BIOL 2040 Investigations in Molecular Cell Biology
4. Category A: Genetics and Genomics. Choose one course from the following
   • BIOL 3050 Genetics
   • BIOL 3150 Introduction to Genomics
   • BIOL 3060 Introduction to Genetics (summer only)
5. Category B: Physiology and Organismal Biology. Choose one course from the following
   • BIOL 3030 Introduction to Physiology
   • BIOL 3210 Plant Biology
   • BIOL 3300 Human Physiology
   • BIOL 4110 Ornithology
   • BIOL 4450 Behavioral Ecology
6. One Advanced Experience course (see current listing on the Biology Checklist)

ADDITIONAL COURSE REQUIREMENTS TO COMPLETE A CONCENTRATION IN PHYSIOLOGY AND ORGANISMAL BIOLOGY

1. BIOL3030 Introduction to Physiology OR BIOL3300 Human Physiology (also applied to Category B above)
2. Choose FIVE additional courses from the following list:
   BIOL 3030 Introduction to Physiology
   BIOL 3140 Exp Methods in Organismal Biology
   BIOL 3210 Plant Biology
   BIOL 3300 Human Physiology
   BIOL 4030 Deep Sea Biology
   BIOL 4110 Ornithology
   BIOL 4120 Inflammation and Disease
   BIOL 4130 Ecology in a Changing Climate
   BIOL 4260 Human Anatomy
   BIOL 4290 Metabolic Regulation and Human Disease
   BIOL 4450 Behavioral Ecology
   BIOL 4350 Biological Chemistry or CHEM 4461 Biochemistry I
   BIOL 4540 Neuroscience
   BIOL 5040 Topics in Developmental Biology
   BIOL 5220 Movement in Biology
   BIOL 5250 Topics in Nutrition and Metabolism
   BIOL 5380 Vertebrate Biomechanics
   BIOL 5420 Cancer as a Metabolic Disease
   BIOL 5420 Cancer as a Metabolic Disease

See the following faculty for advice about course selection and/or post-graduate research in this concentration:
Emrah Altindis
Jeffrey DaCosta
Lynn DiBenedetto
Christopher Kenaley
Heather Olins
Danielle Taghian
Thomas Seyfried