ZOOLOGY

213. Animal Behavior
Spring. 3(3-0)
P: BS 110, BS 111 or LBS 144, LBS 145. R: Not open to freshmen.
Mechanisms and evolution of behavior (ethology).
QP: BS 210, BS 211 BS 212LRS 214 QA: ZOL 313

220. Developmental Biology
Fall. 4(3-3)
P: BS 110, BS 111 or LBS 144, LBS 145.
Principles of development, emphasizing vertebrates. Illustrations from morphological and experimental investigations.
QP: BS 211 ORLBS 141 QA: ZOL 317 ZOL 318

221. Cells and Development
Spring. 4(3-3)
P: BS 110, BS 111 or LBS 144, LBS 145.
The role of cells in growth, differentiation and development of animals from protozoa to mammals.
QP: BS 210 BS 211BS 212LRS 214 QA: ZOL 409 ZOL

450. Advanced Topics in Cell Biology. Interpersonal aspects and applications of modern biotechnology including molecular and cellular mechanisms of development and differentiation. QP: ZOL 411 ZOL 412 ZOL 413

444. Environmental Issues Management
Spring. 3(3-0) Interdepartmental with the Department(s) of Resource Development. R: Juniors or above
Case study approach to explore the interactions of technical, social, economic and legal influences on the management of environmental issues.
QP: ZOL 301 RD 439

450. Cancer Biology
Spring. 3(3-0) Interdepartmental with the Department(s) of Medicine.
P: ZOL 221, BCH 200 or BCH 401
A comprehensive, integrated approach to problems in cancer biology. Topics span cellular and molecular aspects and applications of modern biotechnology, to the causes, treatment and prevention.
World distribution and risk factors.
QP: ZOL 221 BCH 2000RBC 401

453. Field Studies in Marine and Estuarine Biology
Summer. 2 to 3 credits. May remit for a maximum of 5 credits. R: Approval of instructor.
Marine and estuarine communities emphasizing ecology, life histories, behavior, and resource ecology of the organisms present. Field trip to seacoast.
QP: ZOL 454

457. Foundations of Evolutionary Biology
Spring. 3(3-0)
Reading and discussion of original works in evolutionary biology which have shaped modern evolutionary thought.
P: ZOL 212
QP: ZOL 457 ZOL 456

482. Systematics and Evolution
Spring. 4(3-3)
P: ZOL 380
Principles of classification, phylogeny and evolutionary processes within and among organisms. Application of evolutionary theory to the classification and relationships of living organisms.
P: ZOL 317

Courses with an asterisk (*) have not been approved by the University Committee on Curriculum.
ZOLOGY

483*. Environmental Physiology Spring. 4(4-0) Interdepartmental with the Department(s) of Physiology. P: ZOL 250 or ZOL 298.
Aspects of physiology important to the environmental relations of vertebrates and invertebrates: energetics, thermal relations, osmotic-tonic relations, and exercise physiology.
QP: BS 212 ORLBS 140 QA: ZOL 483

484*. Tropical Biology Spring. 3 to 6 credits in increments of 2 credits. Interdepartmental with the Department(s) of Botany and Plant Pathology, Entomology, ZOL 250 or equivalent. R: Juniors and Seniors.
Tropical biota emphasizing evolutionary and ecological princi­ples compared across a diverse tropical ecosystems.
QP: ZOL 398 BOT 450

494*. Capstone: Independent Study Fall. 1 to 6 credits. May reenroll for a maximum of 8 credits. R: Open only to juniors and seniors.
Approval of department. Supervised research on a topic not normally covered in the classroom.
QA: ZOL 494

495*. Capstone: Undergraduate Seminar Fall, Spring. 1(1-0) May reenroll for a maximum of 3 credits. R: Open only to senior Zoology majors.
Approval of department. Economic, social and environmental impact of current developments in Zoology.
QA: ZOL 495

496*. Capstone: Internship in Zoology Fall, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 8 credits. P: Approval of Department R: Senior.
Practical experience applying Zoology training in a setting away from the university.
QA: ZOL 496

497*. Capstone: Undergraduate Thesis Fall, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 8 credits. R: Open only to seniors. Approval of department. Laboratory research culminating in the preparation and defense of an undergraduate thesis.
QA: ZOL 497

517*. Ecological and Evolutionary Mechanisms-Aquatic Summer, 4(4) Interdepartmental with the Department(s) of Botany and Plant Pathology, Fisheries and Wildlife. P: ZOL/BOT 250, or ZOL/FW 431
Experimental field studies of population and community ecology of freshwater lakes and streams, emphasizing interactions among species and between biotic and abiotic factors.
QP: ZOL 398 ZOL 432 QA: ZOL 817 ZOL 871

527*. Advanced Neurobiology Fall. 4(4-0) Interdepartmental with the Department(s) of Physiology, Pharmacology and Toxicology.
Function of nervous system at cellular level: membrane biochemistry and potentials, synaptic transmission, receptor transduction, neural development.
QA: ZOL 827

549*. Chromosome Structure and Genetics Spring of even-numbered years. 3(3-0) Interdepartmental with the Department(s) of:
P: ZOL 341 R: Graduate Students
Classical and molecular genetics of chromosome structure and behavior in mitosis and meiosis.
Topics include: synapsis and disjunction, exchange, centromeres, euchromatin, heterochromatin and transposable elements.
QP: ZOL 441 QA: ZOL 842 GEN 842

544*. Selected Topics in Human Genetics Fall. 3(3-0) P: ZOL 344 R: Senior or Graduate Students
Advanced Training in inheritance of human traits including medical, physiologic, forensic, biochemical, molecular and chromosomal areas.
QP: ZOL 441 ZOL 341 QA: ZOL 844

545*. Ecology and Evolution: the Interface Fall. 3(3-0) Interdepartmental with the Department(s) of Botany and Plant Pathology, Entomology, P: Graduate Students
Conceptual and methodological issues common to both ecology and evolutionary biology.
QA: ZOL 845

551*. Quantitative Methods in Ecology and Evolution Fall. 3(3-0) Interdepartmental with the Department(s) of Botany and Plant Pathology, P: STT 465
Interpretation and analysis of ecological and evolutionary biology data. Introduction to statistical computer software.
QP: STT 423 QA: BOT 851

581*. Soil Zoology Spring of even-numbered years. 4(2-6) P: ZOL 306 or KNT 404 R: Seniors and graduate students
Soil animals and their ecology, biology and systematics.
QP: ZOL 306 QA: ZOL 881

588*. Molecular and Cellular Aspects of Development Spring. 4(1-0) P: Permission of Department
Current research topics in Developmental Biology. Emphasizing cell interactions and molecular regulation of cellular function in fertilization, morphogenesis, differentiation, oncogenesis, teratogenesis and regeneration.

590*. Special Problems Fall, Spring, Summer. 1 to 3 credits. P: Approval of department R: Graduate
Current problems in Zoology QA: ZOL 890

591*. Current Topics in Ecology and Evolution Summer. 1(1) May reenroll for a maximum of 8 credits. Interdepartmental with the Department(s) of Botany and Plant Pathology, Crop and Soil Sciences, R: Graduate students.
Discussions of current research topics in ecology and evolution with distinguished visiting scientists. Critical evaluation of theoretical and empirical developments and methods of analyses are emphasized.
QA: ZOL 891

592*. Global Biodiversity and Conservation Issues Spring. 2(-3) R: Graduate students P: ZOL 250 R: Graduate students
Status of world biota and factors in the decline and extinction of major groups of plants and animals. Theory & design of natural reserves; Assessment & ecological meaning of diversity; Management of global & local diversity.
QA: ZOL 950

593*. Seminar Topics Fall, Spring. 1 to 0 credits. May reenroll for a maximum of 6 credits. P: Approval of department R: Graduate students
Graduate seminar on current research topics in Zoology.
QA: ZOL 895

596*. Population and Community Ecology Fall. 4(4-0) R: Graduate students
Population dynamics of animals and plants utilizing life tables and projection matrices; species interactions; life history theory; structure and dynamics of communities; succession.
QA: ZOL 922

597*. Community and Ecosystem Ecology Spring. 4(4-0) Interdepartmental with the Department(s) of Botany and Plant Pathology, Fisheries and Wildlife, P: Graduate status R: Graduate students
Structure and function of natural communities & ecosystems. Topics include community analysis along environmental gradients, succession, food web analysis, energy flow, nutrient cycling, & effects of human activities on ecosystems.
QP: ZOL 398 BOT 450 QA: ZOL 897

598*. Master's Thesis Research 1 to 2 credits. May reenroll for a maximum of 12 credits. P: Approval of department R: Graduate
Research for the master's degree in Zoology including animal behavior, cell and developmental biology, ecology, evolution, organismal biology, neurobiology, genetics.

599*. Doctoral Dissertation Research Fall, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 48 credits. P: Approval of department