

PHYSIOLOGY

PSL

Department of Physiology
College of Natural Science**250 Introductory Physiology**

Fall, Spring. 4(4-0) R: Not open to students in the Department of Physiology.

Function, regulation and integration of organs and organ systems of higher animals emphasizing human physiology.

310 Physiology for Pre-Health Professionals

Fall. 4(4-0) P: BS 111 or LB 145 or BS 149H or ANTR 350 Not open to students with credit in PSL 250 or PSL 431 or PSL 432.

Fundamental concepts of human physiology with an emphasis on physiology related to health careers.

410 Computational Problem Solving in Physiology

Fall, Spring. 3(3-0) RB: PSL 432 R: Approval of department.

Quantitative analysis of physiological data: mathematical models, curve fitting, data analysis and interpretation. Problem solving involving exponential and logistic growth. Cerebral blood flow, convective cooling, oxygen consumption, thermoregulation, other applications.

420 Membrane Biophysics: An Introduction

Fall, Spring. 2(2-0) RB: One year of college physics or chemistry, and one year of college mathematics.

Biophysical and chemical aspects of biomembranes. Experimental model membrane systems including planar lipid bilayers and liposomes. Biotechnological applications of lipid bilayer sensors.

425 Physiological Biophysics

Fall. 3(3-0) P: PSL 250 or PSL 310 or PSL 431 RB: College Algebra, Differential Calculus

The quantitative physical phenomena underlying kinetics and equilibria of physiological processes.

431 Human Physiology I

Fall. 3(3-0) P: (BS 111 or LB 145) and (CEM 142 or CEM 152 or CEM 182H or LB 172) RB: BS 110 or LB 144 R: Open to juniors or seniors.

Molecular basis of physiological control systems, neural function including autonomic nervous system, and cardiovascular and respiratory systems.

432 Human Physiology II

Spring. 3(3-0) P: (BS 111 or LB 145) and (CEM 142 or CEM 152 or CEM 182H or LB 172) and PSL 431 RB: BS 110 or LB 144 R: Open to juniors or seniors.

Continuation of PSL 431. Function and regulation of the digestive, endocrine, renal, and reproductive systems. Integration of physiological responses.

440 Topics in Cell Physiology

Fall, Spring. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Critical discussion and evaluation of a selected problem of mammalian cell physiology including cell biophysics, molecular biology of the cell.

441 Topics in Endocrinology

Fall, Spring. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Selected topic on the role of hormones in the regulation of growth, metabolism, differentiation.

442 Topics in Cardiovascular Physiology

Fall. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Selected topic in blood flow physiology.

443 Topics in Respiratory Physiology

Fall of odd years. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Selected topic in the physiology of gas exchange and lung mechanics.

445 Topics in Environmental Physiology

Spring of odd years. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Selected topic in environmental physiology with an emphasis on thermoregulation.

446 Topics in Visual Physiology

Fall of even years. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Selected topic in the functioning of the visual system in health and disease.

447 Topics of Brain Function

Fall. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Selected topic on the functioning of the mammalian brain.

448 Topics in Gastrointestinal Physiology

Fall. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Selected topic in the physiology of the digestive system.

449 Developmental Neurophysiology

Fall. 2(2-0) P: Completion of Tier I writing requirement. RB: PSL 432 R: Open only to Physiology majors.

Development of the nervous system in invertebrate and vertebrate animals.

473 Environmental Fish Physiology

Spring of odd years. 3(3-0) Interdepartmental with Fisheries and Wildlife. Administered by Fisheries and Wildlife. P: BS 111 or BS 149H or LB 145 R: Not open to freshmen or sophomores.

Physiological adaptations of fish to environmental factors; bioenergetics, homeostasis, senses adaptations to diverse and extreme aquatic environments.

475 Capstone Laboratory in Physiology

Spring. 2(1-3) RB: PSL 432 R: Open only to Physiology majors.

Laboratory exercises in animal physiology including osmoregulation, receptor mediated regulation, nervous and hormonal control of function.

480 Special Problems

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 5 credits in all enrollments for this course. RB: PSL 432 R: Open only to Physiology majors.

Independent study under the auspices of a faculty member.

483 Environmental Physiology (W)

Spring. 4(4-0) Interdepartmental with Zoology. Administered by Zoology. P: ((BS 110 or LB 144 or BS 148H) and completion of Tier I writing requirement) and (BS 111 or LB 145 or BS 149H) and (CEM 141 or CEM 151 or CEM 181H or LB 171)

Aspects of physiology important to the environmental relations of vertebrates and invertebrates: energetics, thermal relations, osmotic-ionic relations, and exercise physiology.

513 Animal Physiology for Veterinarians

Spring. 4(4-0) R: Open to graduate-professional students in the College of Veterinary Medicine.

Physiology of the neural, cardiovascular, renal, respiratory, digestive, endocrine, and reproductive systems, and thermoregulation.

534 Cell Biology and Physiology I

Fall. 3 credits. Interdepartmental with Human Anatomy and Biochemistry and Molecular Biology. Administered by Physiology. R: Open only to graduate-professional students in the College of Human Medicine or College of Osteopathic Medicine.

Modern concepts of cell biology as a basis for understanding the physiology of human tissues and organ systems in health and disease.

535 Cell Biology and Physiology II

Spring. 4 credits. Interdepartmental with Human Anatomy and Biochemistry and Molecular Biology. Administered by Physiology. R: Open only to graduate-professional students in the College of Human Medicine or the College of Osteopathic Medicine.

Modern concepts of cell biology as a basis for understanding the physiology of human tissues and organ systems in health and disease. Continuation of PSL 534.

552 Medical Neuroscience

Spring. 4(3-2) Interdepartmental with Human Anatomy and Neurology and Ophthalmology and Radiology. Administered by Neurology and Ophthalmology. R: Open only to graduate-professional students in the Colleges of Human Medicine and Osteopathic Medicine. SA: ANT 552

Correlation of normal structure and function of the human nervous system with clinical testing, classical lesions, and common diseases.

611 Research Problems in Physiology Clerkship

Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (PSL 511) and Completion of Semester 5 in the graduate professional program in the College of Veterinary Medicine.

Individual work on a research problem.

825 Cell Structure and Function

Spring. 3(3-0) Interdepartmental with Biochemistry and Molecular Biology and Microbiology and Molecular Genetics. Administered by Biochemistry and Molecular Biology. RB: BMB 401 or BMB 461. SA: BCH 825

Molecular basis of structure and function. Cell properties: reproduction, dynamic organization, integration, programmed and integrative information transfer. Original investigations in all five kingdoms.

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- 827 Physiology and Pharmacology of Excitable Cells**
Fall. 4(4-0) Interdepartmental with Neuroscience and Pharmacology and Toxicology and Zoology. Administered by Pharmacology and Toxicology. RB: PSL 431 or PSL 432 or BMB 401 or BMB 461 or ZOL 402
Function of neurons and muscle at the cellular level: membrane biophysics and potentials, synaptic transmission, sensory nervous system function.
- 828 Cellular and Integrative Physiology**
Spring. 4(4-0) RB: PSL 827
Cellular physiology as basis for understanding integrative functions of various body systems, including nervous, cardiovascular, respiratory, urinary, gastrointestinal, endocrine, reproductive, and immune.
- 839 Systems Neuroscience**
Spring. 4(4-0) Interdepartmental with Human Anatomy and Neuroscience and Pharmacology and Toxicology and Psychology and Zoology. Administered by Neuroscience. R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Agriculture and Natural Resources, Natural Science, Social Science, and Veterinary Medicine. SA: ANT 839
Anatomy, pharmacology, and physiology of multicellular neural systems. Sensory, motor, autonomic, and chemo-regulatory systems in vertebrate brains.
- 885 Vertebrate Neural Systems**
Spring of odd years. 3(2-2) Interdepartmental with Human Anatomy and Neuroscience. Administered by Neuroscience. SA: ANT 885
Comparative analysis of major component systems of vertebrate brains. Evolution, ontogeny, structure, and function in fish, amphibians, reptiles, birds and mammals.
- 899 Master's Thesis Research**
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 36 credits in all enrollments for this course.
Master's thesis research.
- 901 Investigating the Lung**
Fall of even years. 2(2-0) Interdepartmental with Large Animal Clinical Sciences and Pathobiology and Diagnostic Investigation. Administered by Large Animal Clinical Sciences. R: Open to graduate students.
Integrative biology of the lung. Structure and function. Molecular, cellular, and organ responses to injury.
- 910 Cellular and Molecular Physiology**
Fall. 4(4-0) RB: BMB 802; PSL 432 or PSL 501 or PSL 511; one calculus course. R: Open only to graduate students in the Department of Physiology or Department of Pharmacology and Toxicology.
Readings in cell physiology and physiological aspects of molecular biology.
- 950 Topics in Physiology**
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Approval of department.
Classical and modern concepts in selected areas of physiology.
- 980 Problems in Physiology**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
Individual research problems in physiology.
- 999 Doctoral Dissertation Research**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 120 credits in all enrollments for this course.
Doctoral dissertation research.