PHYSIOLOGY

Department of Physiology
College of Natural Science

250 Introductory Physiology
Fall, Spring. 4(4-0) R: Not open to students in the Physiology major. Not open to students with credit in PSL 310. 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 161 or BS 181H or LB 145 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. Summer. 3(3-0) P: PSL 431 RB: PSL 432 R: Open to juniors or seniors. 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 (W)
Summer. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: CEM 145 and (CEM 142 or CEM 152 or CEM 182H or LB 172) and PSL 431: RB: PSL 432: R: Open to seniors or in the Lyman Briggs Physiology Coordinate Major or approval of department. Biophysical and chemical aspects of biomembranes. Experimental model membrane systems including planar lipid bilayers and liposomes. Biotechnological applications of lipid bilayer sensors.

421 Adult and Embryonic Stem Cells (W)
Spring of even years. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

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.

426 Computational Problem Solving in Physiology II (W)
Fall, Spring. Summer. 2(2-0) P: PSL 410 and PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Lyman Briggs Physiology Coordinate Major or in the Physiology major. Approval of department. Present and advanced computational and computer programming strategies and techniques appropriate to problem solving in biology, physiology and medicine.

431 Human Physiology I
Fall. 3(3-0) P: (BS 161 or BS 181H or LB 145) and (CEM 142 or CEM 152 or CEM 182H or LB 172): RB: PSL 162 or BS 182H 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 161 or BS 181H or LB 145) and (CEM 142 or CEM 152 or CEM 182H or LB 172) and PSL 431: RB: PSL 162 or BS 182H 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.

439 Special Topics in Physiology (W)
Fall. 2(2-0) A student may earn a maximum of 4 credits in all enrollments for this course. P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Lyman Briggs Physiology Coordinate Major or in the Physiology major. Special topics in physiology, focusing on the process of biomedical discovery, alternative medicine, autoimmunity, or other selected topics of interest related to careers in health care or biomedical research.

440 Topics in Cell Physiology (W)
Spring. 2(2-0) A student may earn a maximum of 4 credits in all enrollments for this course. P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

441 Topics in Endocrinology (W)
Fall. 2(2-0) A student may earn a maximum of 4 credits in all enrollments for this course. P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

442 Topics in Cardiovascular Physiology (W)
Fall. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major. Selected topics in mammalian cell physiology related to cell energetics and metabolism, molecular and cellular biology, cell growth and differentiation, or molecular physiology and functional genomics.

445 Topics in Environmental Physiology (W)
Spring of odd years. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major. Selected topics in environmental physiology with an emphasis on thermoregulation.

446 Topics in Sensory Physiology (W)
Spring of even years. 2(2-0) P: (PSL 431) and completion of Tier I writing requirement RB: PSL 432: R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major. Selected topics in the functioning of the visual system, auditory system, or other sensory systems in health and disease.

447 Topics in Brain Function (W)
Summer. 2(2-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

448 Topics in Gastrointestinal Physiology (W)
Fall. 2(2-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

449 Topics in Neurophysiology and Neural Development (W)
Fall. 2(2-0) P: (PSL 431) or completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

450 Physiology in Health and Disease
Fall. 3(3-0) P: (PSL 431 and PSL 432) and completion of Tier I writing requirement RB: PSL 432 R: Open to seniors in the Physiology major or in the Lyman Briggs Physiology Coordinate Major.

475L Capstone Laboratory in Physiology
Fall, Spring, Summer. 2(1-3) P: PSL 431 RB: PSL 432 R: Open to seniors or in the Physiology major or in the Lyman Briggs Physiology Coordinate Major. Laboratory exercises in animal and human physiology, including cardiovascular and respiratory function, nerve and muscle function, osmoregulation, receptor-mediated regulation, neural and hormonal control.

480 Special Problems in Physiology
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course. RB: PSL 431 and PSL 432 and completion of Tier I Writing Requirement R: Open to undergraduate students in the Physiology major. Approval of department. Independent study under the supervision of a faculty member.
Physiology—PSL

483 Environmental Physiology (W)  Spring. 4(4-0) Interdepartmental with Zoology. Administered by Zoology. P: (BS 161 or LB 145 or BS 181H) and completion of Tier I writing requirement) and (BS 162 or LB 144 or BS 182H) and (CEM 141 or CEM 151 or CEM 181H or LB 171)

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

490 Independent Research in Physiology  Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course. RB: PSL 431 and PSL 432 R: Open to undergraduate students in the Physiology major. Approval of department. Supervised laboratory research in physiology under the direction of a faculty member.

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.

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 multicuslular neural systems. Sensory, motor, autonomic, and chemoregulatory 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. 1 to 24 credits. A student may earn a maximum of 120 credits in all enrollments for this course. Doctoral dissertation research.