

PHYSIOLOGY

PSL

Department of Physiology
College of Human Medicine
College of Natural Science
College of Osteopathic Medicine
College of Veterinary Medicine

- 101 Current Issues in Physiology**
 Fall. 2(2-0) Not open to students with credit in PSL 250 or PSL 431 or PSL 432.
 Physiological bases of health issues of broad social significance, and new approaches for the treatment of specific disorders.
- 250 Introductory Physiology**
 Fall, Spring. 4(4-0) R: Not open to students in Physiology.
 Function, regulation and integration of organs and organ systems of higher animals emphasizing human physiology.
- 323 Physiology and Hygiene of the Eye**
 Fall of odd years. Summer of even years. 3(3-0) R: Not open to Physiology majors.
 Basic anatomy, physiology, and hygiene of the visual system: normal and abnormal visual function, methods of correction, and educational implications.
- 331 Cell Physiology: Function of Specialized Cells**
 Fall. 3(3-0) P:M: (BS 111 or LBS 145)
 Functions of differentiated cells, including mechanisms of cell communication, excitable membranes, contraction, motility, transport, secretion, and extra cellular matrix.
- 410 Computational Problem Solving in Physiology**
 Fall, Spring. 3(3-0) P:NM: (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.
- 431 Human Physiology I**
 Fall. 3(3-0) P:NM: (BS 111 and CEM 142)
 Neural function including autonomic nervous system, physiological control systems, endocrinology, reproduction and digestive function.
- 432 Human Physiology II**
 Spring. 3(3-0) P:NM: (PSL 431)
 Continuation of PSL 431. Function and regulation of the cardiovascular, respiratory, and renal systems. Control of tissue blood flow, blood pressure, blood gases, body fluid volume and electrolytes.
- 440 Topics in Cell Physiology**
 Fall, Spring. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 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:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Selected topic on the role of hormones in the regulation of growth, metabolism, differentiation.
- 442 Topics in Cardiovascular Physiology**
 Fall. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Selected topic in blood flow physiology.
- 443 Topics in Respiratory Physiology**
 Fall of odd years. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Selected topic in the physiology of gas exchange and lung mechanics.
- 445 Topics in Environmental Physiology**
 Spring of odd years. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Selected topic in environmental physiology with an emphasis on thermoregulation.
- 446 Topics in Visual Physiology**
 Fall of even years. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Selected topic in the functioning of the visual system in health and disease.
- 447 Topics of Brain Function**
 Fall. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Selected topic on the functioning of the mammalian brain.
- 448 Topics in Gastrointestinal Physiology**
 Fall. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Selected topic in the physiology of the digestive system.
- 449 Developmental Neurophysiology**
 Fall. 2(2-0) P:NM: (PSL 432) R: Open only to Physiology majors. Completion of Tier I writing requirement.
 Development of the nervous system in invertebrate and vertebrate animals.
- 473 Environmental Fish Physiology**
 Fall of even years. 3(3-0) Interdepartmental with Fisheries and Wildlife. Administered by Department of Fisheries and Wildlife. P:M: (BS 111) R: Not open to freshmen or sophomores.
 Survey of 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) P:NM: (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. P:NM: (PSL 432) R: Open only to Physiology majors.
 Independent study under the auspices of a faculty member.
- 483 Environmental Physiology**
 Spring. 4(4-0) Interdepartmental with Zoology. Administered by Department of Zoology. P:M: (BS 110 or LBS 144 or LBS 148H) and (BS 111 or LBS 145 or LBS 149H) and (CEM 141 or CEM 151 or CEM 181H or LBS 171) and completion of Tier I writing requirement.
 Aspects of physiology important to the environmental relations of vertebrates and invertebrates: energetics, thermal relations, osmotic-ionic relations, and exercise physiology.
- 501 Introductory Medical Physiology**
 Fall. 3(3-0) R: Graduate-professional students in colleges of Human and Osteopathic Medicine.
 Physiological basis of medical practice.
- 511 Veterinary Physiology**
 Spring. 5(5-0) R: Completion of Semester 1 of the graduate professional program in the College of Veterinary Medicine.
 Physiology of the nervous, cardiovascular, renal, respiratory, digestive, endocrine, and reproductive systems. Homeostasis.
- 534 Cell Biology and Physiology I**
 Fall. 3 credits. Interdepartmental with Human Anatomy; Biochemistry and Molecular Biology. 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; Biochemistry and Molecular Biology. 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 Neurology and Ophthalmology; Radiology; Human Anatomy. Administered by Department of Neurology and Ophthalmology. R: Graduate-professional students in 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. P:NM: (PSL 511) R: Completion of Semester 5 in the graduate professional program in the College of Veterinary Medicine.
 Individual work on a research problem.

Physiology–PSL

- 804 Molecular and Developmental Neurobiology**
Fall. 3(3-0) Interdepartmental with Neuroscience; Pharmacology and Toxicology. Administered by Department of Neuroscience. RB: Bachelor's degree in a Biological Science or Psychology. R: Open only to graduate students in the Neuroscience major.
Nervous system specific gene transcription and translation. Maturation, degeneration, plasticity and repair in the nervous system.
- 825 Cell Structure and Function**
Spring. 3(3-0) Interdepartmental with Biochemistry and Molecular Biology; Microbiology and Molecular Genetics. Administered by Department of Biochemistry and Molecular Biology. P:NM: 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 Pharmacology and Toxicology; Zoology; Neuroscience. Administered by Department of 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.
- 839 Systems Neuroscience**
Spring of odd years. 4(4-0) Interdepartmental with Anatomy; Pharmacology and Toxicology. Administered by Department of Anatomy. R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Agriculture and Natural Resources, Natural Science, and Veterinary Medicine. SA: ANT 839, PHM 839
Anatomy, pharmacology, and physiology of multicellular neural systems. Sensory, motor, autonomic, and chemo-regulatory systems in vertebrate brains.
- 841 Advanced Endocrine Physiology and Pharmacology**
Fall. 4(4-0) Interdepartmental with Animal Science; Pharmacology and Toxicology; Psychology. P:NM: (BMB 461 and PSL 432) R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. SA: ANS 841, PHM 841, PSY 841
Basic and advanced concepts of endocrine and reproductive physiology and pharmacology.
- 850 Research Topics in Physiology**
Spring. 1(0-2) P:NM: (PSL 432 and PSL 910) R: Open only to graduate students in Physiology.
Readings, presentations and discussions of selected research literature in physiology.
- 885 Vertebrate Neural Systems**
Spring of odd years. 3(2-2) Interdepartmental with Anatomy. Administered by Department of Anatomy. 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 24 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; Pathology. Administered by Department of Large Animal Clinical Sciences. R: Open only 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) P:NM: BMB 802; PSL 432 or PSL 501 or PSL 511; one calculus course. R: Open only to graduate students in Physiology or 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 6 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
Doctoral dissertation research.

POLITICAL SCIENCE

PLS

Department of Political Science College of Social Science

- 100 Introduction to American National Government**
Fall, Spring, Summer. 3(3-0)
The policymaking process in national government, with emphasis on political participation, the presidency, Congress, Supreme Court, bureaucracy, and civil rights and civil liberties.
- 140 Introduction to Comparative Politics**
Fall, Spring, Summer. 3(3-0)
Comparative analysis of political systems in first, second, and third-world countries. Alternative methods for comparative cross-cultural analyses of political systems.
- 160 Introduction to International Relations**
Fall, Spring, Summer. 3(3-0) Not open to students with credit in MC 220 or MC 221.
Dynamics of conflict and cooperation. Processes of foreign policy decision making. Major international economic issues. Basic future trends. Primary analytical approaches for studying world politics.
- 170 Introduction to Political Philosophy**
Fall, Spring, Summer. 3(3-0)
Basic questions of political philosophy as considered from ancient to modern times. Primary focus on the origins, defense, and radical critiques of modern liberal democracy.
- 200 Introduction to Political Science**
Fall, Spring, Summer. 4(4-0)
The science of politics. Theory construction, model building, empirical testing, and inductive inference. Examples from American, international and comparative politics.
- 201 Introduction to Methods of Political Analysis**
Fall, Spring, Summer. 4(4-0) P:M: (PLS 200 or MC 201)
Philosophy of social science. Principles of research design, measurement, hypothesis testing, measures of association, cross tabulations, and regression analysis.
- 301 American State Government**
Spring. 3(3-0)
Structure and processes of American state government. Interstate differences. Constitutions, elections, political parties, interest groups, and intergovernmental relations. Policy focus on education, welfare, and criminal justice.
- 302 Urban Politics**
Fall. 3(3-0)
Structure and processes of American urban politics. Relationship of cities to U.S. federal system. Interstate variations. Policy focus on public education, crime, social welfare, and economic development.
- 304 Minority Politics**
Fall. 3(3-0)
Minority groups and the political process in the United States. Civil rights movements, political organizations, legal decisions, political participation, and legislative politics.
- 305 Environmental Politics**
Fall. 3(3-0)
The impact of political and legal institutions on U.S. environmental policy. Public opinion, environmental interest groups, and the environmental movement. The politics of air and water pollution, toxic wastes, public lands, risk assessment, and environmental justice.
- 310 Public Bureaucracy in the Policy Process**
Fall, Spring. 3(3-0)
Role of public bureaucracy in the U.S. Theories of administrative behavior and the impact of hierarchy on policymaking. Relations with the president, Congress, interest groups, and the public. Administrative functions, responsiveness, and ethics.
- 313 Public Policy Analysis**
Fall, Spring, Summer. 3(3-0) Not open to students with credit in MC 444.
Political and economic concepts for evaluating the consequences of government decision making. Issues of problem identification, policy adoption, and implementation affecting program evaluation.
- 320 The American Judicial Process**
Fall, Spring. 3(3-0) R: Not open to freshmen or sophomores.
Analysis of the structure and functions of judicial systems. Organization, administration, and politics of judicial bureaucracies. Roles of judges, juries, counsel, litigants, and interest groups in the adjudication process.