Physiology of the Cell
Fall. Summer of odd-numbered years. 3(3-0) BCH 401, BCH 402.
Physiologic mechanisms common to all living cells are discussed, with an emphasis on the role of the vertebrates. The roles of the cell membrane and cation transport in the function of the cell are studied in the context of the physiological behavior of vertebrate organs and systems.

Human Physiology
Winter. 4(4-0) One year of biological science or ANT 151 or CEM 141.
Physiology of the digestive, endocrine, nervous, and reproductive systems.

Human Physiology
Spring. 4(4-0) PSL 431 or approval of department.
Physiology of the autonomic nervous, cardiovascular, renal, and respiratory systems.

Mammary Physiology
Fall. 4(3-2) PSL 241, BCH 200 or BCH 401.
Interdepartmental with and administered by the Department of Animal Science.

Principles of Animal Reproduction
(445) Winter. 4(4-0) PSL 241, BCH 200 or BCH 401. Interdepartmental with and administered by the Department of Animal Science.
Processes of reproduction and endocrinology with emphasis on anatomy of reproductive systems, follicle development, gonadotropin, reproductive cycle, fertilization, sex determination, gestation and artificial regulation of these reproductive events for economic benefit.

Asian Physiology
(445) Spring. 4(3-2). Approval of department. Interdepartmental with and administered by the Department of Animal Science.
Systemic physiology of birds emphasizing respiration, circulation, temperature regulation, the endoclines, and reproduction.

Biological Membranes
(435) Winter. 4(4-0). PSL 431 or approval of department.
For course description, see Interdisciplinary Courses.

Special Problems
Fall. Winter. Spring. Summer. 1 to 5 credits. Approval of department.

Honors Research Paper
Fall. Winter. Spring. Summer. 2 credits. PSL 400 and approval of department.
Oral and written presentation of undergraduate research project initiated and carried forward under PSL 480.

Principles of Endocrinology
Winter. 4(4-0) One year organic chemistry; ZOL 317. Interdepartmental with and administered by the Department of Zoology.
Hormonal principles, illustrated by experimental observations, in vertebrates and invertebrates. Emphasis on cellular endocrinology. Group discussion, background in organic chemistry, and cell biology strongly recommended. Term paper required.
804B. Neuroscience Laboratory II
Spring. 4(2-4) PSL 804A. Interdepartmental with Biophysics and the departments of Psychology, and Zoology. Administered by the Department of Psychology. Continuation of PSL 804A.

808. Neuroendocrinology
Winter of even-numbered years. 3(3-0)
Approval of department.
Anatomical, biochemical and physiological aspects of neuroendoendocrinology. Control systems and integration among endocrine glands will be emphasized.

809. Physiology of Aging
Winter of odd-numbered years. 3(3-0)
Basic course on elements of physiology.
Theories of aging; vital statistics; changes in cellular, tissue and organ functions; pathology, integrative mechanisms; longevity and life prolongation; neurological; immunological; brain function; chronological versus individual aging.

836. Physical Principles of Biological Systems
Winter of even-numbered years. 3(3-0)
Application of laws and methods of physics to measurement and description of physiological phenomena.

837. Radiobiology
Fall of even-numbered years. 3(3-0)
Approval of department.
Application of radioactive tracer techniques to study of biological functions. Determination of turnover rates and tissue constituents by isotope dilution. Control of radiation hazards.

839. Analysis of Hormone Action
Spring. 4(4-0) ZOL 317, or approval of department. Interdepartmental with and administered by the Department of Zoology.
Discussion of recent work on the molecular and developmental aspects of hormone action in vertebrates and invertebrates. Selected topics to vary from year to year.

865. Advanced Neurobiology
(PSY 885.) Spring. 4(4-0) BPT 827. Interdepartmental with Biophysics and the departments of Anatomy, Psychology, and Zoology. Administered by the Department of Anatomy.
Basic organization, structure and function of neural networks comprising sensory, motor and autonomic systems including examples from invertebrates and vertebrates. Attendance at neurosciences seminar is required.

875. Advanced Physiology Laboratory
Summer of odd-numbered years. 4(2-5) PSL 801, PSL 802, PSL 803 and approval of department.
Experiments in animal and human physiology; data collection, analysis and interpretation.

885. Vertebrate Neural Systems I
(PSY 885.) Winter of even-numbered years. 5(4-4) ANT 815, ANT 85S recommended. Interdepartmental with the departments of Anatomy, Psychology and Zoology. Administered by the Department of Anatomy.
Structure and function of major component systems of vertebrate brains; their evolution, ontogeny and comparative analysis in mammals, birds, reptiles, amphibians and fish. Interrelation of behavioral, anatomical and physiological studies.

888. Vertebrate Neural Systems II
(ZOL 885.) Spring of even-numbered years. 5(4-4) ANT 885. Interdepartmental with the departments of Anatomy, Psychology, and Zoology. Administered by the Department of Anatomy.
Continuation of PSL 885. Major component systems of vertebrate brains, their evolution, ontogeny, and comparative analysis in mammals, birds, reptiles, amphibians and fish. Interrelation of behavioral, anatomical, and physiological studies.

899. Master's Thesis Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

910. Seminar
Fall, Winter, Spring. 1(1-0) May enroll for a maximum of 2 credits for the Master's program and a maximum of 4 additional credits for either the Ph.D. or the diploma program.

919. Cardiovascular System
Fall. 4(3-3) May enroll for a maximum of 12 credits if different topics are taken. PSL 802.
Classical and current literature on physiology of heart, circulation, and microcirculation. Each fall a different one of these topics will be discussed. Laboratory work illustrates methodology and special procedures.

945. Physiology of Mammalian Reproduction
Winter of odd-numbered years. 4(5-0)
DRY 445 or PSL 445 or approval of department. Interdepartmental with and administered by Dairy Science.
Chemistry and biosynthesis of reproductive hormones. Gonadal, hypothalamic and pituitary development of reproductive potential. Ovulation, fertilization, implantation and placentation will be studied. Relationships of conceptus, uterus and corpus luteum. Parturition.

950. Topics in Physiology
Fall, Winter, Spring, Summer. 1 to 3 credits. May enroll for a maximum of 9 credits. Approval of department.
Classical and modern concepts in selected areas of physiology.

990. Problems
Fall, Winter, Spring, Summer. 1 to 3 credits. May enroll for a maximum of 9 credits. Approval of department.
Limited amounts of individual work on selected research problems.

999. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

POlITICAL SCIENCE PLS

College of Social Science

100. American National Government
Fall, Winter, Spring, Summer. 3(3-0)
Major aspects of national government with emphasis on the policy-making process.

140. Comparative Politics
Fall, Winter, Spring. 3(3-0)
Comparisons of political systems in western and non-western nations.

160. International Relations
Fall, Winter, Spring, Summer. 3(3-0)
Contemporary world affairs surveyed. The struggle for power, the nation-state system, factors creating harmony and hostility among nations. War and peace in our time.

170. The Iomos
Fall, Winter, Spring, Summer. 3(3-0)
Introduction to basic contemporary political ideologies; theoretical foundations of democracy, socialism, communism, political elitism, and nationalism. Special attention to ideology underlying contemporary political problems.

200. Introduction to Political Science
Fall, Winter, Spring, Summer. 3(3-0)
Acquaints the student with the theories, methods and concepts of political science. Emphasis is on ideology and interests in the political process.

251. Human Values and Politics: On Liberty (S)
Fall. 4(4-0)
Liberty as a basic value underlying public issues of life or death: right to live; rights of women and children; slavery; justification of war and terrorism, capital punishment, biological planning.

252. Human Values and Politics: Equality and Justice (S)
Winter. 4(4-0)
Equality and justice as basic values underlying major public issues in areas such as crime and punishment, education, family and employment. Effect of public policy on equal opportunity.

253. Human Values and Politics: Authority and the Individual (S)
Spring. 4(4-0)
Individualism and authority as basic values underlying public issues; free speech, rights of minorities, right of privacy; community norms and individual preferences.

IDC. Introduction to Contemporary China
For course description, see Interdisciplinary Courses.

290. Methods of Political Research
Fall, Winter, Spring, Summer. 3(3-0)
Design and execution of research in political behavior and institutions. Major emphasis on logic underlying various types of political research. Introduction of appropriate data sources and field methods.

291. Methods of Political Research
Fall, Winter, Spring, 4(4-0) PLS 290.
Analysis of political data, with major emphasis on quantitative techniques.

301. American State Government
Fall, Winter, Spring, Summer. 3(3-0)
Major aspects of policy-making process at the state government level. Comparison of state political systems.

302. American Urban Government
Fall, Winter, Spring, Summer. 3(3-0)
Urban political process in America. Politics of policymaking for urban functions; politics of intergovernmental relations.