601. Osteopathic Manipulative Medicine Clerkship
Fall, Winter, Spring, Summer. 6 credits. May reenroll for a maximum of 12 credits. Grade P in all courses offered in terms 1 through 8. Advanced training in the diagnosis of musculoskeletal dysfunctions and application of osteopathic manipulative techniques in patient care.

620. Directed Studies
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 24 credits. Approval of department. Individual or group work on special problems related to biomechanics, neuromusculoskeletal system primarily.

890. Independent Study
Fall, Winter, Spring, Summer. 1 to 8 credits. May reenroll for a maximum of 32 credits. Approval of department. Individual or group work related to biomechanics and/or neuromusculoskeletal system.

BIOMEDICAL ENGINEERING BME

College of Engineering

410. Electronic Instrumentation in Biology and Medicine
Fall. 4(4-0) MTH 112, PHY 235 or approval of instructor. Electronic components and circuits. Physiological measurements. Transduction of physiological events to electrical signals. Detection of physiological events by electrical impedance measurements. Ultrasonic techniques in biomedical systems. Biomedical applications of lasers.

441. Biological Transport Mechanisms
Fall. 3(3-0) MTH 215. Mechanisms which govern transport or movement, heat and mass. Application to mathematical description of transport processes in biological systems and to solution of biomedical problems.

481. Tissue Biomechanics
Fall. 3(3-0) ANT 316 or approval of department. Fundamentals of continuum mechanics in relation to morphological classification of tissue. Mechanical properties of connective and muscle tissue.

499. Independent Study
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 9 credits. Approval of instructor. Individual reading and research under the supervision of a member of the Biomedical Engineering Committee.

BIOPHYSICS BPY

College of Human Medicine College of Natural Science

403. Introductory Biophysics: Membranes and Electrical
Fall. 3(3-0) One year organic chemistry or biochemistry, 1 year biology, PHY 239, PHY 259, MTH 113, or approval of department. Salient features of biophysics; principles and methods. Structure, function, and organization of biologic molecules; molecular biophysics; thermal biophysics; bioenergetics and photobiology.

404. Introductory Biophysics: Molecular and Thermal
Spring. 3(3-0) One year organic chemistry or biochemistry, PHY 239, PHY 259; MTH 113 or approval of department. Salient features of biophysics, principles and methods; radiation biophysics; membrane biophysics; biologic phenomena; neurobiology, and psychophysics.

450. Introduction to the Nervous System
Fall. 3(3-0) One year organic chemistry or biochemistry, PHY 239, PHY 259, MTH 113 or approval of department. Salient features of biophysics, principles and methods; radiation biophysics; membrane biophysics; biologic phenomena; neurobiology, and psychophysics.

804B. Neuroscience Laboratory II
Spring. 4(2-4) FSY 804A. Interdepartmental with the departments of Physiology, Psychology, and Zoology. Administered by the Department of Psychology. Continuation of FSY 804A.

821. Molecular Biophysics

824. Membrane Biophysics
Winter of odd-numbered years. 4(3-2) Approval of department. Membrane Biophysics will cover interfacial phenomena in biology and chemistry; structure and properties, theoretical and experimental models for biological membranes; membrane biochemistry. Labs will emphasize biomolecular lipid membrane (BLM) techniques.

826. Cellular Biophysics
Spring of odd-numbered years. 4(4-0) Approval of department. Basic cell structure and function at the molecular level. Emphasis will be on genetic and molecular controls of cellular systems.

834. Membranes: Natural and Artificial
Spring of odd-numbered years. 2 to 3 credits. May reenroll for a maximum of 3 credits. Approval of department. Emphasis is placed on the biophysical and biochemical characterization of biological membranes and their theoretical and experimental models. Presentation and discussion by students and staff of recent advances in membrane research.

850. Simpler Systems Approaches to Learning and Memory
Fall, Winter, Summer. 4(4-0) 854 or 858.1 Simpler invertebrate and vertebrate, nervous systems which have been or could be useful for electrophysiological and molecular approaches to learning and memory.

885. Advanced Neurobiology (BIM 885.) Spring. 4(4-0) BPY 887. Interdepartmental with the departments of Anatomy, Physiology, 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 neuroscience seminar is required.

888. Special Topics in Biophysics
Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 15 credits. Special topics within the five subdivisions of biophysics; structure, organization and function of biological phenomena, sensory perception, and psychophysics and biomechanics.

890. Readings in Biophysics
Fall, Winter, Spring. 3 to 6 credits. Approval of department. Reading course in special topics adapted to the individual preparation and needs of the student.