Biophysics — Descriptions of Courses

410. Terrestrial Ecology
   Summer. 6 credits. B.S. 219 or approval of department. Given at W.K. Kellogg Biological Station. Interdepartmental with the departments of Botany and Plant Pathology and Zoology. Factors determining distribution and abundance. Interrelationship of plants, animals, and environment. Extensive field investigations of several types of terrestrial communities in light of current theory.

420. Seminar in Recent Advances in Biological Science
   Fall, Winter, Spring. Summer. 1 to 3 credits. May reenroll for a maximum of 6 credits if different topics are taken. Approval of department. A series of lectures by senior faculty of topics on the history, development, the most recent advances and the possible future and limits of the Biological Sciences.

440. Man and Environment Workshop for Teachers
   Summer. 3 credits. Approval of department. Given at W.K. Kellogg Biological Station. Discussions and practical work sessions concerning the development of ideas and activities for environmental studies in and outside the classroom. Designed for intermediate and secondary inservice teachers.

450. Outdoor Environmental Studies
   Summer. 3 credits. May reenroll for a maximum of 9 credits when new topics are given. Teaching experience or approval of department. B.S. 451 must be taken summer. Given at W.K. Kellogg Biological Station. Emphasis on environmental understanding. Planning and developing interdisciplinary program for elementary and intermediate children.

451. Outdoor Environmental Studies: Laboratory
   Summer. 2 to 5 credits. May reenroll for a maximum of 15 credits when new topics are given. Teaching experience, B.S. 450. Given at W.K. Kellogg Biological Station. Testing instructional materials and strategies developed in B.S. 450 with elementary and middle school children in an outdoor environmental education program.

499. Research
   Fall, Winter, Spring. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of director of biological science program and student's advisor. Undergraduates are invited on an individual basis into research laboratories of faculty in biological departments of the college. After three terms of research, a presentation in thesis form is produced and defended.

800. Problems in Biological Science
   Fall, Winter, Spring. Variable credit. B.S. degree in biological science.

999. Doctoral Dissertation Research
   Fall, Winter, Spring. Variable credit. M.S. degree in biological science or equivalent. Research in some phase of biological science, data to form the basis for the thesis required for the doctoral degree in biological science.

Biomechanics

College of Osteopathic Medicine

590. Special Problems in Biomechanics
   Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 12 credits. Approval of department. Each student will work under direction of a faculty member on an experimental, theoretical or applied problem.

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, neuromusculo-skeletal system primarily.

880. Athletic Medical Systems
   (S.I.) Fall, Spring. 3 credits. Bachelor's degree and involvement with secondary school athletics.

999. Independent Study
   Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 12 credits. Approval of instructor. Individual reading and research under the supervision of a member of the Biomedical Engineering Committee.

Biomedical Engineering

College of Engineering

410. Electronic Instrumentation in Biology and Medicine
   Fall. 4(4-0) MTH 112, PHY 238 or approval of instructor. Electronic components and circuits. Physiological and psychological concepts applied to human development, training and care. Injury prevention, emergency medical and rehabilitation stressed.

411. Electric Theory of Nerves
   Winter. 4 credits. MTH 310, PHY 288.

414. Clinical Instrumentation
   Winter. 4 credits. MTH 310, PHY 288.

460. Materials in Biomedical Engineering
   Winter. 3(0) PSL 240 or PSL 431 or approval of department. Basics of materials science. Biocompatibility of metals, polymers and ceramics. Internal and external prosthetic materials.

431. Biological Transport Mechanisms
   Spring. 3(0) MTH 315. Mechanisms which govern transport or momentum, heat and mass. Application to mathematical description of transport processes in biological systems and to solution of biomedical problems.

481. Tissue Biomechanics
   Fall. 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 direction of a faculty member.

402. Introductory Biophysics: Molecular and Thermal Physics
   Spring. 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. Structures, function, and organization of biologic molecules; molecular biophysics; thermal biophysics; bioenergetics and photobiology.

403. Introductory Biophysics: Membranes and Electrical
   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; bioelectric phenomena; neurobiology; and psychobiophysics.

I.D.C. Biological Membranes
   For course description, see Interdisciplinary Courses.

480. Special Topics in Biophysics
   Fall, Winter, Spring, Summer. 2 to 4 credits. Approval of department; BPY 402 recommended. Special topics within five areas of biophysics: structure-function correlation, neurobiophysics, membrane biophysics, molecular biophysics, or theoretical biophysics.