Descriptions — Biological Science

Courses

500. Problems in Biological Science
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 19 credits. B.S. degree in biological science.

505. Outdoor Environmental Studies
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 9 credits if different topics are taken. B.S. degree in biological science.

Emphasis on environmental understanding. Development of educational materials through team research and testing. Trials of materials with elementary, middle, secondary school or college students.

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

BIOMECHANICS BIM

College of Osteopathic Medicine

500. Basic Concepts in Biomechanics
Winter. 2(2-0) Admission to a college of medicine or approval of department. Interdepartmental with the College of Osteopathic Medicine.

Basic concepts of biomechanics and their relationship to functional anatomy and osteopathic manipulative therapy.

590. Special Problems in Biomechanics
Fall, Winter, Spring, Summer. 1 to 8 credits. May reenroll for a maximum of 32 credits. Approval of department.

Each student will work under direction of a faculty member on an experimental, theoretical, or applied problem.

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.

800. Special Topics
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 6 credits. Approval of department. Independent study in topics of biomechanics.

805. Biomechanical Analysis
Fall. 3(3-0) Approval of department. Methods for analysis of biokinematic and biomechanic data.

810. Biokinematics
Winter. 3(3-0) BIM 805 or approval of department. Size, position and mobility of the human body as a mechanical linkage system. Detailed study of body joints and kinematic models.

811. Biokinetics
Spring. 3(3-0) BIM 810 or approval of department. Application of Newtonian mechanics to problems of force transmission and related motions in the muscular-skeletal system.

812. Theory of Tissue Mechanics
Fall. 3(3-0) Approval of department. Introduces the concepts of stress and strain in tissue and the dependency of mechanical parameters on biological factors.

850. Research Seminar
Fall, Winter, Spring. 1(1-0) May reenroll for a maximum of 3 credits. Approval of department.

Discussion of current research topics in biomechanics with strong clinical application.

871. Research Methods in Biomechanics I
Fall. 2(3-2) BIM 812 or concurrently or approval of department. Measurement of responses of biological tissues to internal and external demands. Techniques include visual, palpatory, electrophysiological, and mechanical assessment methods.

872. Research Methods in Biomechanics II
Winter. 2(1-3) BIM 810 or concurrently or approval of department. Measurement of body geometry and mass distribution. Measurements include anthropometry, goniometry, volume and inertial properties of the human body.

873. Research Methods in Biomechanics III
Spring. 2(1-3) BIM 811 or concurrently or approval of department. Measurements of dynamics of human motion. Measurements include force plate and photogrammetric kinematic assessment methods.

890. Independent Study
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 12 credits. Approval of department.

Individual or group work related to biomechanics or/and neuromusculoskeletal system.

899. Master's Thesis Research
Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 12 credits. Approval of department.

Conduct research for master's thesis.

411. Electric Theory of Nerves

414. Clinical Instrumentation

424. Materials in Biomedical Engineering
Fall. 3(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. Biomedical Transport Mechanisms
Spring. 3(3-0) MTH 215. Mechanisms which govern transport or momentum, heat and mass. Application to mathematical description of transport processes in biological systems and solution of biophysical problems.

451. 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 8 credits. Approval of instructor.

Individual reading, and research under the supervision of a member of the Biomedical Engineering Committee.

BOTANY AND PLANT PATHOLOGY BOT

College of Agriculture and Natural Resources
College of Natural Science

201. Plants, People and the Environment (N)
Fall, Spring. 3(3-0) Relevance of plants to modern society. Basic botanical concepts and socially significant groups of plants. Natural resource exploitation. Plants as they relate to human population growth, food production, and energy resource depletion.

265. Plant Biology
Fall. 3(3-0) High school chemistry and high school algebra.

An introduction to plant science for students seeking a general knowledge of the principles of plant biology as well as for prospective plant science majors.