Bioengineering Emphasis: Course Suggestions

2022-2026 Catalog

This list of classes is a suggestion for you as you build your Emphasis. You will have to make sure you have the pre-requisites and in some cases you also might need to get permission from the faculty teaching the class.

BIO 231: Human Anatomy and Physiology 1. Structure and function of the skeletal, muscular, nervous, endocrine, and integumentary systems. Molecular, cellular, and organ system levels of organization. Lab includes study of prosected human cadavers.

BIO 426: Immunology. Principles of molecular and cellular immunology. Emphasis on molecular regulation of immune cell development, including generation of unique receptors, lymphocyte signal transduction and selection, programmed cell death and regulation of immune responses. Discussion and demonstration of roles of immunology in disease and as diagnostic tools.

BMED 420: Principles of Biomaterials Design. Fundamentals of materials science as applied to bioengineering design. Biocompatibility of materials. Materials characterization and design. Natural and synthetic polymeric materials. Wound repair, foreign body response, blood clotting. Transplantation biology, artificial organs, and tissue engineering. Medical devices, government regulations, and ethical issues.

BMED 450: Contemporary Issues in Biomedical Engineering. Current and evolving topics in biomedical engineering, including medical and industrial applications. Exploration of contemporary issues in biomedical engineering, including technical and societal implications.

BMED 460: Engineering Physiology. Physiology for biomedical engineering students, with an emphasis on control mechanisms and engineering principles. Engineering aspects of basic cell functions; biological control systems; muscle; neural; endocrine, and circulatory systems, digestive, respiratory, renal, and reproductive systems; regulation of metabolism, and defense mechanisms.

CHEM 373: Molecular Biology. Structure of nucleic acids and chromosomes. Mechanisms and regulation of nucleic acid and protein synthesis. Molecular biology techniques.

CHEM 312: Organic Chemistry: Fundamentals and Applications. Structure, isomerism, nomenclature, fundamental reactions of major functional groups and applications of organic chemicals in agriculture, medicine, industry, and the home

CHEM 475: Molecular Biology Laboratory. Introduction to techniques used in molecular biology and biotechnology; DNA extraction, characterization, cloning, Southern blotting, reverse transcription, polymerase chain reaction, and sequencing analysis.