

# BIOMEDICAL ENGINEERING (BMD-ENGR)

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## Courses

BMD-ENGR 5505 Polymers in Biomedical Engineering Credits: 3

This course offers students knowledge about polymers for biomedical applications from the fundamentals of polymer physics and chemistry.

Polymeric materials include synthetic polymers, natural polymers, micro-/nano-composite polymers, and biologically oriented synthetic polymers.

The course will give students a foundation in polymeric biomaterial design, synthesis, characterization, process, and applications. The topics include theory of polymer chemistry and physics, polymeric biomaterials design, surface-engineering of polymeric biomaterials, functionalization of polymeric biomaterials, characterization of polymeric biomaterials, micro- and nano-fabrication of polymeric biomaterials, cell/tissue-polymeric biomaterial interactions, and the biomedical applications of polymeric biomaterials in bone, cartilage, neural, vascular regeneration, orthopedic device, drug and gene therapy.

**Prerequisites:** Graduate Student in Biomedical Engineering or at the Consent of the Instructor.

BMD-ENGR 5515 Bioelectromagnetics and Bioelectricity Credits: 3

As an introduction to the fields of Bioelectromagnetics and Bioelectricity, this course will cover the interaction between biological tissue and externally incident electromagnetic waves with frequencies that range from DC all the way to the visible range and higher as well as the intrinsically generated electrical signals produced by biology cells and tissues.

**Prerequisites:** Graduate Student in Biomedical Engineering or at the Consent of the Instructor.

BMD-ENGR 5599 Research Credits: 1-6

Independent investigation in field of mechanical engineering to be presented as a thesis.

**Prerequisites:** You must be a biomedical engineering student to take this course.