

BME 530/ME 5359/MTE 559 : Biomedical Materials

This course is intended to serve as a general introduction to various aspects pertaining to the application of synthetic and natural materials in medicine and healthcare. This course will provide the student with a general understanding of the properties of a wide range of materials used in clinical practice. The physical and mechanical property requirements for the long term efficacy of biomaterials in the augmentation, repair, replacement or regeneration of tissues will be described. The physico-chemical interactions between the biomaterial and the physiological environment will be highlighted. The course will provide a general understanding of the application of a combination of synthetic and biological moieties to elicit a specific physiological response. Examples of the use of biomaterials in drug delivery, theranostic, orthopedic, dental, cardiovascular, ocular, wound closure and the more recent lab-on-chip applications will be outlined. This course will highlight the basic terminology used in this field and provide the background to enable the student to review the latest research in scientific journals. This course will demonstrate the interdisciplinary issues involved in biomaterials design, synthesis, evaluation and analysis, so that students may seek a job in the medical device industry or pursue research in this rapidly expanding field. Students cannot receive credit for this course if they have received credit for the Special Topics (ME 593/MTE 594) version of the same course, or for ME/BME 4814 Biomedical Materials.

Department

Biomedical Engineering

Mechanical Engineering

Materials Science and Engineering

Credits 2.0