

BME 698 - BioMicroElectroMechanical Systems (3 credits )

BioMEMS: Device Design

Prerequisites: Knowledge of mechanics, optics, electromagnetism and general chemistry.

Design of MEMS micro- and nanosystems used in advanced bioanalytical techniques for microfluidic devices, lab-on-a-chip systems, implantable chips, non-invasive biomedical sensors, DNA analytical chips and microelectronic array systems. Micro and nanodevices: microfabrication technologies, design of photolithography masks, LIGA technique, electron-beam lithography, hot embossing, and polymer molding techniques. Design of microelectronics and microfabrication processes for fabrication of BioMEMS using silicon, glass, ferroelectrical, ceramics, polymer, and optical materials for biomedical applications. Advanced research topics on BioMEMS are studied.