Department of Biomedical Engineering
Micro- and Nano- Technologies
3-Credit hour/ Technical Elective

How are implantable pressure sensors fabricated? How are nanoparticles synthesized? What is Lab-on-Chip? These are some of the questions that will be answered in this 3-credit hour technical elective. The course will be taught into two parts:

Micro-technologies
Manufacturing processes that have led to the development of microdevices will be introduced. Microelectromechanical systems (MEMS) design will be discussed. Students will have the opportunity to design the different layers of a simple MEMS device in Autocad to understand the rules that govern MEMS fabrication. Students will explore the fabrication and working of MEMS pressure sensors, neuroprobes, ocular sensors, micro-needles, drug delivery pumps, microfluidics for lab-on-chip applications.

Nano-technologies
Nanotechnology processes and mechanisms of synthesis involved fabrication of different nano-structures for biomedical applications. Students will be introduced to nanoparticles for imaging and drug delivery, nanofibers for scaffolding and tissue regeneration, and nanotubes/nanorods for imaging and sensing.

Open to all undergraduate and graduate students. No Prequisite. **Special emphasis will be on biomedical applications**

Class format: Lecture

Textbook: Assigned reading from selected sources (textbooks and journal articles available through Library database)

Exam format: Two in-class exams (multiple choice and essay)

Assignments: One project, online discussions and article summaries (via Canvas)