

MSE 597

Materials for Biomedical Devices

Fall 2026

A materials centered look at how biomedical devices are selected, processed, tested, and improved

Instructor: Prof. Lia Stanciu

CRN
28963

Schedule
Tue Thu 3:00 PM to 4:15 PM

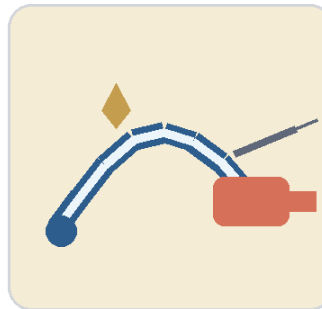
Location
BHEE 234



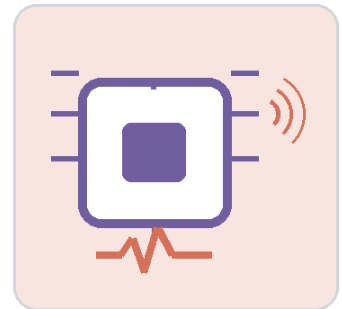
Hip implant



Porous titanium



Catheter



Biosensor

Why take this class?

- Learn how materials choices shape the performance of real biomedical devices.
- See how processing, microstructure, wear, coatings, and degradation affect reliability.
- Analyze devices from a materials science perspective during in class studio sessions.
- Build experience that connects biomaterials, medtech, and advanced materials design.

Topics include

- Additive manufacturing of implants
- Wear and tribology in joint replacements
- Surface coatings and adhesion
- Polymer processing for medical devices
- Ceramic reliability and fracture
- Bioresorbable materials
- Sterilization and materials compatibility
- Failure analysis of biomedical devices

Course format

Short lectures

Focused lectures on materials challenges in modern biomedical devices.

Device studio sessions

In class group analysis of materials selection, testing, and failure modes.

Team project

A final design dossier and presentation built from work done during class.