COURSE DETAIL

BIOMATERIALS
Country Ireland
Host Institution Trinity College Dublin
Program(s) Trinity College Dublin
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Bioengineering
UCEAP Course Number 137
UCEAP Course Suffix
UCEAP Official Title BIOMATERIALS
UCEAP Transcript Title BIOMATERIALS
UCEAP Quarter Units 5.00
UCEAP Semester Units 3.30

Course Description

This course explores materials used in tissue replacement including metallic, ceramic, and natural/synthetic polymeric materials. Implant applications and design considerations for these materials as well as the associated problems with long term survival are described so that the mechanical, chemical, and physiological interactions between in vivo host environment and the implanted biomaterial can be better understood. Integration of biomaterial structure and function are emphasized throughout the course. Advanced manufacturing and fabrication technologies to generate biomaterials with specialized structural and interfacial properties are introduced. Students obtain a detailed understanding of the composition and properties of the major classes of biomaterial used in medical devices. The required functionality for a range of synthetic implantable biomaterials and how this relates to material choice for specific applications are also covered. Associated failure modes are introduced through a series of real-life case studies. Sterilization techniques, regulatory aspects, and standards with relation to quality and safety are introduced.

Language(s) of Instruction
English

Host Institution Course Number
MEU44BM6

Host Institution Course Title
BIOMATERIALS

Host Institution Campus
Trinity College Dublin

Host Institution Faculty

Host Institution Degree

Host Institution Department
Engineering

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