



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Biomaterials Processing

## MATSCEN 5651

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**Credit Hours:**

3.00

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**Course Levels:**

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

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**Course Components:**

Lecture

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**Course Description:**

The relationship between the processing of biomaterials - metals, polymers and ceramics - and the impact that these steps have on final biomedical properties.

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**Prerequisites and Co-requisites:**

Prereq: 5611 or 5641; or permission of instructor.

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**Course Goals / Objectives:**

- Learn about manufacturing conditions/techniques and how they govern the subsequent mechanical and chemical behavior of modern biomaterials
  - Learn concepts related to chemical reaction kinetics and rate controlling steps in various manufacturing processes
  - Learn about concepts of bulk and surface modification widely used in the manufacture of orthopedic implants
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**Course Topics:**

- Biomaterials processing and performance –3 material classes
  - Basic processing methods
  - Polymer rheology
  - Unit operations and properties
  - Particulate-based processing
  - Microstructural development
  - Case study - total hip replacement: development and processing
  - Biomimetics and its limits
  - Processing of tissue engineering scaffolds
  - Surface Processing
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**Designation:**

Elective