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United Nations Institute for Training and Research

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CIFAL Istanbul - BME2063 Biomaterials

People

Deadline: 16 Sep 2024

Type:	Course
Location:	Istanbul, Türkiye
Date:	23 Sep 2024 to 27 Dec 2024
Duration:	3 Months
Programme Area:	Decentralize Cooperation Programme
Website:	https://cifalistanbul.org/
Price:	\$0.00
Event Focal Point Email:	cisil.sohodol@eas.bau.edu.tr
Partnership:	CIFAL Istanbul, Bahçeşehir University

BACKGROUND

The Biomaterials course introduces students to the fundamental principles of biomaterials science, emphasizing the relationship between material properties and their interactions with biological systems. This interdisciplinary course integrates general chemistry, material science, and engineering principles to address challenges in tissue engineering and medical applications. Students will explore different types of biomaterials, including metals, ceramics, polymers, and composites, while gaining insights into their biocompatibility, surface properties,

and degradation behaviors.

EVENT OBJECTIVES

Understand the fundamental properties of biomaterials and biocompatibility, Understand different types of bonding and how these are organized into material subunits for metal, ceramics, and polymers, Understand the molecular mechanisms behind the mechanical properties for each class of materials as well as the principles behind the events that strengthen and weaken biomaterials, Understand the surface properties, toxicity, and material characterization techniques.

LEARNING OBJECTIVES

Understand the fundamental properties of biomaterials and biocompatibility, Understand different types of bonding and how these are organized into material subunits for metal, ceramics, and polymers, Understand the molecular mechanisms behind the mechanical properties for each class of materials as well as the principles behind the events that strengthen and weaken biomaterials, Understand the surface properties, toxicity, and material characterization techniques.

CONTENT AND STRUCTURE

The course is structured to provide a comprehensive understanding of biomaterials, from their basic properties to their applications in tissue engineering and medical devices. It begins with an introduction to the fundamental concepts of biomaterials science, followed by detailed exploration of the structures and properties of metals, ceramics, polymers, and composites. Students learn about key topics such as biocompatibility, corrosion, degradation, and surface characteristics of biomaterials. Practical examples and case studies illustrate the challenges and advancements in biomaterials research, while discussions on future trends encourage forward-thinking and innovation.

METHODOLOGY

The course employs a combination of lectures, laboratory sessions, and case study analyses to provide both theoretical and practical insights. Lectures focus on foundational principles and advanced topics in biomaterials, while laboratory sessions allow students to analyze and experiment with different materials to understand their properties and behaviors. Case studies are used to discuss real-world applications and challenges in tissue engineering and biomaterials development.

TARGETED AUDIENCE

Students of Bahcesehir University