SYLLABUS

Name: ***Biomaterials and materials for medicine (IBioAIB>SI3BMM23S)***
Name in Polish:
Name in English: ***Biomaterials and materials for medicine***

Information on course:

Course offered by department: Faculty of Biomedical Engineering
Course for department: Silesian University of Technology
Term: Winter semester 2024/2025
Cordinator of course edition: Dr hab. inż. Anna Zębowicz

Default type of course examination report:
ZAL

Language:
English

Course homepage:
https://platforma.polsl.pl/rib/course/view.php?id=388

Short description:
Historical premises for the development of biomaterials. The biotolerance of metal biomaterials, the role of biopersils in tissue structures and body fluids. The problem of corrosion of biomaterials - characteristics of the corrosive tissues and body fluids environment, types of corrosion and methods of corrosion resistance testing. Cr-Ni-Mo steels used on implants. Characteristics of implantable Co-based alloys. Titanium and its alloys as implant materials. Shape memory alloys used on implants. Metallic materials used on surgical instruments. Ceramic materials for medical applications. Concepts of polymer characterization and property testing. Materials for tissue assembly. Biomaterials for dentistry.

Description:
Scope of diploma: BIOMATERIALS AND TECHNOLOGIES FOR MEDICINE

Bibliography:
1. Li Jingan: Biomaterials and Materials for Medicine: Innovations in Research, Devices, and Applications, Crc Pr Inc 2024 (ISBN 9780367753238)
2. Prakash Srinivasan Timiri Shanmugam, Thamizharasan Sampath, Indumathy Jagadeeswaran: Biocompatibility Protocols for Medical Devices and Materials, Elsevier Science & Technology 2023
3. Agrawal C. Mauli: Introduction to Biomaterials: Basic Theory with Engineering Applications, Cambridge 2013
4. An Introduction to Materials in MedicineEl, sevier Science Publishing Co Inc 2020 (ISBN 9780128161371)

https://www.google.com/search?
sca_esv=590159290&sxsrf=AM9HkKkx87Fi2sP8D3mGMQ2Gq1p8oY2JeA:1702395440347&q=biomaterials+introduction+to&tbm=bks&sou
usosweb.polsl.pl/kontroler.php?_action=katalog2/przedmioty/edytujPrzedmiot&prz_kod=IBioAIB%3ESI3ITB21O&callback=g_d99b541d

Learning outcomes:
K1A_W06
terms of metallic biomaterials applied in various forms of implants,
the fields of methods of shaping the structure and physicochemical properties of metallic biomaterials,
the fields of selection of ceramic and polymer biomaterials due to the specificity of the tissue environment.
K1A_U09
to assess the quality of metal biomaterials in accordance with the applicable normative regulations
K1A_U10
to select the type of biomaterial for specific applications
K1A_K01
constantly supplementing and expanding knowledge

Assessment methods and assessment criteria:
lecture
written test
(or on-line meeting)
presentation

laboratory
reports

Information on course edition:

Default type of course examination report:
ZAL

Bibliography:
missing bibliography in English

Details of classes and study groups

lecture (15 hours)

Study groups details

Group number 1

Class instructors:
Dr hab. inż. Anna Zębowicz

laboratory classes (15 hours)

Study groups details

Group number 1

Class instructors:
Julia Lisoń-Kubica

Element of course groups in various terms:

Course group description	First term	Last term
missing group description in English (IBioAIB>SI-3-23-Sb)	2024/2025-Z	

Course credits in various terms:

<without a specific program>			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2024/2025-Z	