Cracow University of Technology

Course title: **Bioceramics**
Institute/Division: Chair of Material Engineering, Faculty of Material Engineering and Physics
Number of contact hours: 15 hours
Course duration: 1 semester
ECTS credits: 3

Course description:

This course gives the knowledge of basic properties of ceramics, including biocompatibility and bio-functionality, information about basic methods of testing bioceramics material and various applications of ceramic materials in the medical field.
Topics covered include:

- Fundamentals of bio-ceramics
- Ceramics as biomaterials
- Biominerals and mineralized tissues
- Biostable ceramics
- Bioactive ceramics
- Composites based on ceramic matrix
- Bioactive coatings
- Methods of manufacturing bioceramic
- Applications
- Biomedical market

Literature:

- Wibisono, Y.; Pratiwi, A.Y.; Octaviani, C.A.; Fadilla, C.R.; Noviyanto, A.; Taufik, E.; Uddin, M.K.H.; Anugroho, F.; Rochman, N.T. Marine-Derived Biowaste Conversion into Bioceramic Membrane Materials: Contrasting of Hydroxyapatite Synthesis Methods. *Molecules* 2021, *26*, 6344.
- Piconi, C.; Sprio, S. Oxide Bioceramic Composites in Orthopedics and Dentistry. J. Compos. Sci. 2021, 5, 206.
- Tavoni, M.; Dapporto, M.; Tampieri, A.; Sprio, S. Bioactive Calcium Phosphate-Based Composites for Bone Regeneration. *J. Compos. Sci.* 2021, *5*, 227.
- Abbas, Z.; Dapporto, M.; Tampieri, A.; Sprio, S. Toughening of Bioceramic Composites for Bone Regeneration. *J. Compos. Sci.* 2021, *5*, 259.
- Hench, L.L. *An Introduction to Bioceramics*: Second Edition, World Scientific Publishing Company, 2013.

Course type: Lectures (15 hours)
Assessment method: Attendance, activity, oral presentation, oral exam
Prerequisites: At least one college level math, physics and chemistry course
Primary target group: Material Engineering
Lecturer: Kinga Korniejenko, PhD
Contact person: Kinga Korniejenko e-mail: kinga.korniejenko@pk.edu.pl