



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Medical materials and their utilization [S1IBio1>MMiIU]

### Course

Field of study

Biomedical Engineering

Year/Semester

3/6

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

polish

Form of study

full-time

Requirements

elective

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

15

### Number of credit points

2,00

### Coordinators

### Lecturers

### Prerequisites

A student starting this course should have basic knowledge of biopolymers used in medicine and techniques for assessing their properties and production.

### Course objective

Acquainting with biomaterials used for medical devices and learning about special processing techniques and methods of utilization.

### Course-related learning outcomes

Knowledge:

The student has in basic knowledge of polymeric materials used for medical devices, especially those used in prosthetics, and techniques of their shaping and utilization.

Skills:

The student knows how to retrieve information from literature, databases and other sources (also in English) in the area of biomedical engineering.

The student knows how to identify and formulate simple engineering tasks of a practical character, typical for biomedical engineering especially selecting materials for particular biomedical applications.

Social competences:

The student is aware of the necessity for continuous learning and knows how to inspire and organize the process of learning of other people.

The student knows how to prioritize tasks either defined by him/herself or by others.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified by the colloquium carried out during last lecture. The test consists of 10 differently scored questions. Counting threshold: 50% . Final issues will be sent to students by email

Project: Credit on the basis of the completed and presented (defended) project. The project is performed in groups of 2 students.

### Programme content

Lecture: Acquainting to know different types of medical materials, including raw materials, semi-finished products and products in contact with tissue, including medicine packaging and sanitary articles. Classification of medical materials due to resorbability. Basic engineering materials used in medicine and their properties. Methods of manufacturing semi-finished products and medical devices from biomaterials, taking into account sanitary requirements. Assessment of the properties of products in contact with the tissue, such as surgical sutures and dental fillings. Methods of sterilization and utilization of medical devices depending on the type of material.

Project of selected medical polymeric product.

### Teaching methods

1. Lecture: multimedia presentation, illustrated with films

2. Project: Project involving the development of a selected medical device/product made of polymer material

### Bibliography

Basic:

Liber-Kneć A., Łagan S., "Ćwiczenia laboratoryjne z biomateriałów", Wydawca: Politechniki Krakowskiej, 2011

Koperny M. i inni, Wytyczne oceny technologii medycznych. Wyroby medyczne (medical devices).

Przegląd aktualnego stanu wiedzy i rozwiązań ([http://www.aotm.gov.pl/www/wp-content/uploads/wytyczne\\_hta/2019/2019.04.29\\_wytyczne\\_HTA\\_MD.pdf](http://www.aotm.gov.pl/www/wp-content/uploads/wytyczne_hta/2019/2019.04.29_wytyczne_HTA_MD.pdf))

Nałęcz M., „Biomateriały” Akademicka Oficyna wydawnicza EXIT, 2000

Czasopismo „Polimery w medycynie” dostępne online [www.polimery.am.wroc.pl](http://www.polimery.am.wroc.pl)

Additional:

Cedro-Niwińska A. , Jachowicz R., Materiały medyczne ([https://emp0pwn0cdn0blob0kipzwl0prod.static-osdw.pl/kipzwladdons/7f63f084/fragmenty\\_tekstu\\_215900120.pdf](https://emp0pwn0cdn0blob0kipzwl0prod.static-osdw.pl/kipzwladdons/7f63f084/fragmenty_tekstu_215900120.pdf))

### Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00