Cracow University of Technology

Course syllabus

binding for the doctoral students of the CUT Doctoral School commencing their studies in the academic year 2022/2023

Information on the course

Name of the course in Polish	Nowoczesne Materiały dla Medycyny
Name of the course in English	Novel materials for medicine
Number of the ECTS points	1
Language of instruction	Polish
Category of the course	Mandatory / Choosable
Field of education	Engineering and technology
Discipline of education	Materials engineering
Person responsible for the course Contact	Prof. Agnieszka Sobczak-Kupiec, *doctor habilitatus* agnieszka.sobczak-kupiec@pk.edu.pl

Type of course, number of hours in the study programme curriculum

Semester	Credit type (G / NG)*	Lecture	Practical classes	Laboratory	Computer Lab	Project Class	Seminar
2, 3, 4, 5	G	15	0	0	0	0	0

*G – graded credit, NG – non-graded credit

Course objectives

Code	Objective description
Objective 1	Transfer of knowledge in the field of selection criteria and applications of novel materials for medicine
Objective 2	Expanding knowledge in the field of research methods of advanced materials for medicine
Objective 3	Acquiring the ability to select biomaterials

Learning outcomes

Code	Description of the learning outcome adjusted to the specific characteristics of the discipline	Learning outcome symbol in the CUD DS	Methods of verification
OUTCOMES RELATED TO KNOWLEDGE			
EUW1	The doctoral student is able to characterize the main groups of materials in medicine	E_W01, E_W02	Involvement in class activities, a paper
EUW2	The doctoral student is able to explain concepts related to biomaterials	E_W01, E_W02	Involvement in class activities, a paper
OUTCOMES RELATED TO SKILLS			

EUU1	The doctoral student is able to select methods of assessing the properties and suitability of particular materials for medicine	E_U01	A paper, a presentation
EUU2	The doctoral student recognizes the properties of the most important biomaterials. They can point out the advantages and disadvantages of individual materials	E_U01	A paper, a presentation
OUTCOMES RELATED TO SOCIAL COMPETENCES			
EUK1	The doctoral student can refer to the methods of designing, obtaining and testing medical materials known in the literature and justify the methods used or the lack of the need for their use.	E_K01, E_K03	Discussion

Course outline

No.	Contents	Learning outcomes for the course	No. of hours
LECTURE			
W1	Introduction and basic concepts of materials for medicine, ceramic and metallic materials and new trends in the use of these materials in medicine, polymer and carbon materials and latest trends in the use of these materials in medicine	EUW1, EUW2, EUU1	7
W2	Composite materials and new trends in the use of these materials in medicine, skeletal system and the use of materials in bone surgery and orthopaedics	EUW1, EUW2, EUU1	4
W3	Methods of assessing the physicochemical properties and biological interactions of materials intended for medical applications, legal regulations and ethical aspects in materials research for medicine	EUW2, EUU2, EUK1	4

The ECTS points statement

WORKING HOURS SETTLEMENT	
Type of activity	Average number of hours (45 min.) dedicated to the completion of an activity type
SCHEDULED CONTACT HOURS WITH AN ACADEMIC TEACHER	
Hours allotted in the syllabus	15
Consultations	1
Examination / course credit assignment	2
HOURS WITHOUT THE PARTICIPATION OF AN ACADEMIC TEACHER	
Independent study of the course contents	8
Preparation of a paper, a report, a project, a presentation, a discussion	4
ECTS POINTS STATEMENT	
Total number of hours	30
The ECTS points number	1

Preliminary requirements

No.	Requirements
1	Not specified
2	

Course credit assignment conditions / method of the final grade calculation

No.	Description
COURSE CREDIT ASSIGNMENT CONDITIONS	
1	80% attendance in class. Presentation of a paper.
METHOD OF THE FINAL GRADE CALCULATION	
Weighted average grade for the presentation.	

Additional information

Not specified

The course reading list

1	Stanisław Błażewicz, Leszek Stoch — Biomateriały, Kraków, 2004, exit
2	MARCINIAK J. — Biomateriały, Gliwice, 2013, Wydawnictwo PS