

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	Inżynieria materiałów
Name of the course in English	Materials Engineering
Number of the ECTS points	1
Language of instruction	Polish
Category of the course	Choosable
Field of education	Engineering and technology
Discipline of education	Materials engineering
Person responsible for the course Contact	Janusz Mikula, <i>doctor habilitatus</i> , prof. of CUT janusz.mikula@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	NG	15	0	0	0	0	0

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

Course objectives

Code	Objective description
Objective 1	Introduction to the basic groups of metal and non-metal materials
Objective 2	Introduction to the methods of shaping the structure and properties of materials
Objective 3	Acquiring the ability to select methods of heat and plastic treatment of materials

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 knows the methods of shaping the structure and properties of materials.	E_W01, E_W02	Involvement in class activities, a paper
EUW2	The doctoral student knows the basic material groups	E_W01	Involvement in class activities, a paper
OUTCOMES RELATED TO SKILLS			
EUU1	The doctoral student is able to identify the structure of a material.	E_U01	A paper, a presentation

EUU2	The doctoral student is able to present the influence of material degradation conditions on changes in the material's properties.	E_U01	Discussion
OUTCOMES RELATED TO SOCIAL COMPETENCES			
EUK1	The doctoral student is able to refer to methods of shaping the properties of materials known in the literature, use them for issues related to the implementation of the doctoral dissertation, and to justify the choice of the methods used.	E_K01, E_K03	Discussion

Course outline

No.	Contents	Learning outcomes for the course	No. of hours
LECTURE			
W1	Characteristics of solids	EUW1, EUW2, EUU1	1
W2	The structure of materials, structure defects	EUW1, EUW2, EUU1	1
W3	Structure of metal alloys, phase equilibrium systems	EUW2, EUK1	2
W4	Technologies for the production of materials	EUW1, EUW2	1
W5	Plastic working of metal materials, heat treatment of metal materials	EUW1, EUU1	2
W6	Properties of materials	EUW1, EUK1	1
W7	Materials degradation	EUU2, EUK1	1
W8	Ferrous alloys	EUW2, EUU1	2
W9	Non-ferrous alloys	EUW2, EUU1	2
W10	Non-metallic plastics	EUW2, EUU1	2

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	Basic knowledge of materials science
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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

The thematic scope of the lecture, including the level of advancement of the presentation, takes into account the initial preparation and knowledge of the subject by doctoral students.
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The course reading list

1	Ashby Michael F., David Cebon, Hugh Shercliff; Inżynieria materiałowa Tom 1, Wydawnictwo Galektyka, Łódź, 2011.
2	Ashby Michael F., David Cebon, Hugh Shercliff; Inżynieria materiałowa Tom 2, Wydawnictwo Galektyka, Łódź, 2012.