

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 rekonstrukcyjna
Name of the course in English	Reverse 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	Mechanical engineering
Person responsible for the course Contact	Krzysztof Karbowski, <i>doctor habilitatus</i> , prof. of CUT krzysztof.karbowski@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	Introduction of the doctoral students to the methods of product design in reverse engineering systems.
Objective 2	Introduction of the doctoral students to the possibilities of applying reverse engineering in the design of technical and medical products.

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 and understands the methods of product design in reverse engineering systems.	E_W01, E_W02	Involvement in class activities.
EUW2	The doctoral student knows the possibilities of applying the methods of reverse engineering in engineering and research practice.	E_W01, E_W02	Involvement in class activities.
OUTCOMES RELATED TO SKILLS			

EUU1	The doctoral student is able to select the tools and methods of reverse engineering for a specific research task.	E_U01	Involvement in class activities.
EUU2	The doctoral student is able to assess the accuracy of the applied methods of reverse engineering.	E_U01	Involvement in class activities.
OUTCOMES RELATED TO SOCIAL COMPETENCES			
EUK1	The doctoral student is able to make a critical assessment of the applied methods of reverse engineering and is ready to recognize the importance of knowledge in solving research problems using the tools and methods of reverse engineering.	E_K01, E_K03	Involvement in class activities.

Course outline

No.	Contents	Learning outcomes for the course	No. of hours
LECTURE			
W1	From the model to the product - basics of reverse engineering.	EUW1, EUW2, EUU1, EUU2, EUK1	2
W2	Methods of digitizing objects.	EUW1, EUW2, EUU1, EUU2, EUK1	2
W3	Assessment of the accuracy of digitization methods for objects.	EUW1, EUW2, EUU1, EUU2, EUK1	2
W4	Basics of modelling curves and surfaces in CAD systems.	EUW1, EUW2, EUU1, EUU2, EUK1	2
W5	From the point cloud to the parametric surface - basics of modelling in reverse engineering systems.	EUW1, EUW2, EUU1, EUU2, EUK1	2
W6	Assessment of the accuracy of reverse engineering methods.	EUW1, EUW2, EUU1, EUU2, EUK1	2
W7	Examples of applications of reverse engineering methods in technology and medicine.	EUW1, EUW2, EUU1, EUU2, EUK1	3

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	1
HOURS WITHOUT THE PARTICIPATION OF AN ACADEMIC TEACHER	
Independent study of the course contents	9
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	None specified.

Course credit assignment conditions / method of the final grade calculation

No.	Description
COURSE CREDIT ASSIGNMENT CONDITIONS	
1	80% attendance in class and passing the course credit final test (score of at least 50% correct answers).
METHOD OF THE FINAL GRADE CALCULATION	
Grade for the course credit final test: 0% - 49% - grade 2.0 50% - 59% - grade 3.0 60% - 69% - grade 3.5 70% - 79% - grade 4.0 80% - 89% - grade 4.5 90% - 100% - grade 5.0	

Additional information

None specified

The course reading list

1	Karbowski K., <i>Podstawy rekonstrukcji elementów maszyn i innych obiektów w procesach wytwarzania</i> , Kraków, 2008, Wydawnictwo Politechniki Krakowskiej.
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