

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	Zarządzanie rozwojem wyrobu
Name of the course in English	Product development management
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	Jan Duda, <i>doctor habilitatus</i> , prof. of CUT jan.duda@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 to the strategies and systems supporting the development of products.
Objective 2	Acquiring the skills to model integrated product development processes.
Objective 3	Introduction to the principles of designing smart 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			
E UW1	The doctoral student knows the theoretical foundations and strategies for product development.	E_W01, E_W02	Involvement in class activities, grade for the presentation of a paper.
E UW2	The doctoral student knows the development trends in manufacturing processes and systems.	E_W01, E_W02	Involvement in class activities, grade for the presentation of a paper.
OUTCOMES RELATED TO SKILLS			

EUU1	The doctoral student is able to develop a product development model with particular emphasis on the stage of the development cycle corresponding to the topic of the doctoral dissertation.	E_U01	Assessment of the presentation of the product development model.
OUTCOMES RELATED TO SOCIAL COMPETENCES			
EUK1	The doctoral student is ready to critically evaluate the product development strategies.	E_K01, E_K03	Involvement in class activities, grade for the presentation of a paper.
EUK2	The doctoral student can present the substantive scope of the doctoral dissertation in relation to the Industry 4.0 paradigm.	E_K01, E_K03	Assessment of the presentation of the product development model.

Course outline

No.	Contents	Learning outcomes for the course	No. of hours
LECTURE			
W1	Product development strategies. The use of IT systems supporting the development of products in production systems.	EUW1, EUW2, EUU1	4
W2	Product Lifecycle Management (PLM) systems and the information models of these systems.	EUW1, EUW2	4
W3	Industry 4.0 methods and tools in the development of new products.	EUW2, EUU2, EUK1	4
W4	Smart products. Digital thread concept.	EUW1, EUW2	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	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	Knowledge of CAD / CAM systems.
2	Basic knowledge of designing manufacturing processes.

Course credit assignment conditions / method of the final grade calculation

No.	Description
COURSE CREDIT ASSIGNMENT CONDITIONS	
1	Course credit and grade assigned on the grounds of active participation in class and the presentation of the product development model.
SPOSÓB WYZNACZENIA OCENY KOŃCOWEJ	
Average grade for involvement in class activities and the presentation of the product development model.	

Additional information

None specified

The course reading list

1	Duda J., <i>Zarządzanie rozwojem wyrobów w ujęciu systemowym</i> , Kraków, 2016, Wydawnictwo Politechniki Krakowskiej.
2	Santarek K., Duda J., Oleszek S., <i>Zarządzanie cyklem życia produktu</i> , Warszawa, 2022, PWE (w przygotowaniu)
.3	Stark J., <i>Product Lifecycle Management (Volume 1): 21st Century Paradigm for Product Realisation</i> , Geneva, 2020, Springer.
4	Stark J., <i>Product Lifecycle Management (Volume 2): The Devil Is in the Details</i> , Geneva, 2016, Springer.
5	Piotrowski M., <i>Notacja modelowania procesów biznesowych- podstawy</i> , Warszawa, 2007, BTC.