COURSE DESCRIPTION CARD - SYLLABUS

Course name
Application of CAx systems in prototyping of electromechanical systems [S2Elmob1>ZSCAx]

Course

Field of study
Electromobility

Year/Semester
1/2

Area of study (specialization)
Alternative Fuels and Energy Storage

Profile of study
general academic

Level of study
second-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
30

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Knowledge of basic electrotechnology, electrodynamics, analytical and drafting geometry, and WINDOWS operation. Knowledge of the principles of design of technical structures at a general level. Ability to effectively self-educate in a field related to the chosen field of study.

Course objective

Acquisition of skills of correct modeling of spatial structural elements; implementation of selected stages of the design process. Acquisition of skills of computer notation and visualization of technical structures in two- and three-dimensional systems.

Course-related learning outcomes

Knowledge:
Has knowledge of computer analysis and synthesis of electromagnetic devices, including the use of deterministic and heuristic optimization methods; knows the principles of prototyping electromagnetic devices using CAx-type tools.
Has knowledge of methods and tools specific to project and production management with particular emphasis on the field of electromobility.

Skills:
Can apply knowledge of the latest technical and technological developments in the design of non-standard devices and systems in the field of electromobility.
Can estimate the costs of the processes of design, production, operation and disposal of systems and equipment of hybrid and electric vehicles including traction.

Social competences:
He understands that in the field of technology, knowledge and skills devalue rapidly which requires constant replenishment.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Skills acquired in laboratory classes are verified on the basis of the current exercises carried out in class and the control work. Passing threshold: 50% of the points.

Programme content

Presentation of modern CAx systems. Possibilities of using software packages in the design process of electromobility devices. Principles of prototyping of technical objects. Parametric modeling of two- and three-dimensional technical objects. Working with 3D models in terms of their visualization and preparation for simulation calculations. Creation of technical construction documentation.

Teaching methods

Design exercises using learned design tools and visualization of two- and three-dimensional objects.

Bibliography

Basic:
1. Jaskulski A., Autodesk Inventor 2022 PL/2022+ Fusion 360 : podstawy metodyki projektowania, Helion 2021.
2. Dobrzański T., Rysunek techniczny maszynowy, Warszawa PWN, 2021.
3. Pacana J. Podstawy projektowania inżynierskiego z wykorzystaniem systemów CAD/CAM, Oficyna Wydawnicza Politechniki Rzeszowskiej, 2016.

Additional:
1. CAx software documentation posted on websites.

Breakdown of average student's workload

	Hours	ECTS
Total workload	55	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)	25	1,00