COURSE DESCRIPTION CARD - SYLLABUS

Course name
Methods of 3D modeling and visualization of objects

Course

Field of study
Mathematics in Technology

Year/Semester
1/2

Area of study (specialization)
Modelling in Technology

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	15	
Tutorials	Projects/seminars	

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
dr inż. Krzysztof Kowalski

email: Krzysztof.Kowalski@put.poznan.pl

tel. +48616652595

Faculty of Control, Robotics and Electrical Engineering,
ul. Piotrowo 3a, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Basic knowledge in the field of electrical engineering, electrodynamics, analytical geometry, and of the WINDOWS system. Principles of technical construction at the general level. The ability to effectively self-study in a field related to the chosen field of study.

Course objective

Acquiring skills to model elements of spatial structures; implementation of selected stages of the design process. Acquiring the skill of computer visualization of two- and three-dimensional technical constructions.

Course-related learning outcomes

Knowledge

Basic knowledge of the graphical representation of the design, projection rules, cross-sections, dimensioning in engineering applications.

Extended knowledge of the latest trends in the development of scientific disciplines in the field of technical sciences.

Advanced knowledge of ergonomics, health and safety at work, and hazards.

Skills

Is able to formulate an algorithm, uses programming languages and appropriate IT tools used in electrical engineering.

Is able to identify a given problem and indicate the correct way to solve.

Is able to use equipment, tools, etc in accordance with general requirements and technical documentation; knows how to apply the principles of health and safety at work.

He can use properly selected programming environments, simulators and IT tools to support the design process in order to implement the simulation, design and visualization of the technical object.

Can independently search for information in literature, also in foreign languages

Social competences

Is aware of the possibility of making mistakes by himself and others, shows prudent criticism of received content and received results.

Is ready to think and act in an entrepreneurial manner in the field of electrical engineering.

Is aware of his social role as a graduate of a technical university, he is ready to pass on popular science content to the public and to identify and resolve basic problems related to the field of study.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge of the lecture is verified by a project task checking the student's skills. Passing threshold: 50% of points.

The skills in the laboratory classes are verified on the basis of current tasks carried out during the classes and control work. Passing threshold: 50% of points.

Programme content

Lecture: Modeling and visualization rules for three-dimensional objects. Modeling and visualization rules for three-dimensional objects. Two and three-dimensional issues in computer writing. Computer visualization of the structure of spatial objects

Laboratory: Parametric modeling of two and three-dimensional technical objects. Work with 3D models in terms of their visualization and preparation for simulation calculations. Creating technical construction documentation.

Teaching methods

Lecture: multimedia presentation, illustrated with examples given on the board, initiating discussions during the lecture. Additional materials provided to students.

Laboratory: implementation of design exercises using modeling and visualization tools.

Bibliography

Basic

1. Bajkowski J. Podstawy zapisu konstrukcji, Oficyna wydawnicza Politechniki Warszawskiej, Warszawa 2005.

2. Mark de Berg i in, Geometria obliczeniowa algorytmy i zastosowania, WNT Warszawa 2007

3. FolęgaP.,Wojnar G., Czech P.; Zasady zapisu konstrukcji Maszyn, Wydawnictwo Politechniki Śląskiej, Gliwice 2014.

Additional

1. Documentation of CAx programs on websites.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	55	2,0
Student's own work (literature studies, preparation for laboratory classes, project preparation) [1]	20	1,0

[1] delete or add other activities as appropriate