POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)
pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
System CAx

Course

Field of study
Management and production engineering

Year/Semester
3/6

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
10	10	
Tutorials	Projects/seminars	

Number of credit points
2

Lecturers

Responsible for the course/lecturer:

Roman Konieczny PhD
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Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites
Student has a basic knowledge in the field of information technology, knowledge of manufacturing technology. Student can interpret design and manufacturing documentation. Student is able to work in a project team.

Course objective
The aim of the course is to familiarize students with the use of computer technology to support the technical preparation for products manufacturing in an enterprise.

Course-related learning outcomes
Knowledge
Students know the theoretical basis for the use of computer technology to support the technical preparation for products manufacturing in an enterprise. Students can describe the methods of 3D geometric modelling, model visualization methods and procedures for virtual product testing and

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testing and manufacturing planning. Students know the possibilities of using the Rapid Prototyping and Rapid Tooling additive technologies in product development.

Skills

Students can make a 3D geometric part model using solid modeling in the 3D Autodesk Inventor CAD system. They can develop a product model and 2D design documentation using part models, subassemblies and a library of standard elements. They can make the bill of parts based on the product model.

Social competences

Students are aware of the importance of modern information technologies in engineering. They are able to independently develop knowledge of the subject. They can operate in a team designing products using IT tools.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Forming rating

Lectures
Based on answers to questions concerning the material discussed in previous lectures.

Laboratories
On the basis of an assessment of the current progress of tasks.

Summary rating

Lectures
The knowledge acquired in lectures is verified on a written test. The test consists of 5 open questions and one problem-related issue. A pass requires 50% correct answers.

Laboratories
Student preparation for laboratory classes and assessment of skills acquired during laboratory exercises will be verified on the basis of individually performed tasks at the computer workstation, oral answers and written tests on the ability to use studied software tools and design methods.

Programme content

Lectures:

1. Application of computer systems in various departments of the enterprise. Computer tools in product development. Variety of engineering software systems.
2. Application CAD systems in product design. 2D models. Basic 2D tools (precision drawing tools, template drawing, layers, blocks, blocks with attributes, system organization)
3. Using 3D geometry in engineering. 3D modelling methods. Assembly modeling rules. Defining constraints for parts in a assembly. Use of libraries and databases of typical components.

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4. Application of CAPP systems. Preparation of the part program in CAD / CAM system.

5. Capabilities of integrated CAD/CAM/CAE systems. Methodology of using the virtual model for engineering calculations and simulations.

6. Directions of development of engineering software systems.

7. Using Rapid Prototyping in product development.

Laboratory classes:

1. Solid modeling in Autodesk Inventor system. Individual exercises in a computer laboratory.

2. Modelling the assembly.

3. Preparing design documentation using Autodesk Inventor.

Teaching methods

Lecture: multimedia presentation illustrated with examples using the CAD / CAM / CAE demonstration software.

Laboratory exercises: practical exercises, performing tasks at a computer workstation

Bibliography

Basic

1. Przybylski W., Deja M., Komputerowo wspomagane wytwarzanie maszyn. Podstawy i zastosowanie. WNT Warzawa 2007

2. Weiss Z., Techniki komputerowe w przedsiębiorstwie, Wydawnictwo Politechniki Poznańskiej, Poznań, 2002

3. Chlebus E., Techniki komputerowe CAx w inżynierii produkcji, WNT, Warszawa, 2000

Additional

1. Jaskulski A., Autodesk Inventor 2020 PL, Podstawy metodyki projektowania, Wydawnictwo Naukowe PWN, Warszawa 2019

2. Noga B., Inventor, Podstawy projektowania, Wydawnictwo Helion 2011

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	22	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests) [1]	28	1,0

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[1] delete or add other activities as appropriate