COURSE DESCRIPTION CARD - SYLLABUS

Course name
Design automation in CAD/CAM systems [S2ZiIP2>APCC]

Course

Field of study
Management and Production Engineering

Year/Semester
2/3

Area of study (specialization)
Quality Engineering and Management

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

dr inż. Przemysław Zawadzki
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Lecturers

Prerequisites

The student should have knowledge of information technology, engineering graphics, and basic skills in the use of CAD 2D 3D systems. The ability to interpret construction and technological documentation is required.

Course objective

The aim of the course is to familiarize students with the scope and possibilities of automating the processes of designing structures and technologies in an integrated CAD/CAM environment.

Course-related learning outcomes

Knowledge:
1. The student knows the theoretical basis for the use of automation of the processes of designing structures and technologies.
2. The student is able to describe various methods and tools used in the design automation process in CAD/CAM systems.
3. The student is able to select methods and tools for design automation in integrated CAD/CAM systems.

Skills:
1. The student is able to develop a parametric CAD 3D model in the Autodesk Inventor system.
2. The student is able to use the iPart, iAssembly, iCopy and iMate tools of the Autodesk Inventor system.
3. The student is able to write programs supporting 3D modeling in the iLogic module of the Autodesk Inventor system.

Social competences:
1. The student is aware of the importance of modern information technologies in engineering activities.
2. The student is open to the implementation of modern information technologies in science and technology.
3. The student is aware of the role of computerization in engineering activities.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Forming rating
Laboratories: based on an assessment of the current progress in the implementation of tasks.
Summary rating
Lectures: a test consists of closed and open questions scored on a 0-2 scale. The test is passed after obtaining at least 51% of the points. The test is conducted at the end of the semester.
Laboratory: a colloquium - carrying out tasks at a computer station.
Assignment of grades to percentage ranges of results: <90–100> very good; <80–90) good plus; <70–80) good; <60–70) satisfactory plus; <50–60) satisfactory; <0–50) unsatisfactory.

Programme content

Application of the basics of engineering knowledge and advanced CAD/CAM tools to automate the process of designing structures and technologies.

Course topics

Lecture:
1. Integrated CAD/CAM systems in technical preparation of production.
2. Methods and tools for automating the process of designing structures and technologies.
3. Knowledge engineering in the product development process.
4. Knowledge-based systems - KBE.
5. Automation of structure design in CAD systems.
6. Automation of technology design in CAM systems.
Laboratory:
1. Parametric solid modeling CAD 3D.
2. Intelligent part models - Autodesk Inventor iPart tool.
3. Intelligent assembly models - Autodesk Inventor iAssembly tool.
4. iCopy, iMate tools.
5. Programming in the iLogic module.
6 -7. Consolidation exercises.

Teaching methods

Lecture: multimedia presentation illustrated with examples using various CAD/CAM/CAE.
Laboratory: practical exercises, solving tasks on a computer station according to the instructions.

Bibliography

Basic:
1. Przybylski W., Deja M., Komputerowo wspomagane wytwarzanie maszyn. Podstawy i zastosowanie. WNT Warzawa 2007
2. Sydor Maciej. Wprowadzenie do CAD. Podstawy komputerowo wspomaganego projektowania, PWN, 2019
3. Fabian Stasiak. „Zbiór ćwiczeń. AutodeskInventor2018”, Wydawnictwo ExpertBooks

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

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	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)	20	1,00