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
Computer aided design
Course

Field of study	Year/Semester
Mechanical and Automotive Engineering	2/3
Area of study (specialization)	Profile of study
-	general academic
Level of study	Course offered in
First-cycle studies	polish
Form of study	Requirements
Part-time studies	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
9	18	0
Tutorials	Projects/seminars	
0	0	

Number of credit points
3

Lecturers

Responsible for the course/lecturer:

Jan Szczepaniak, Dr Hab. Eng.

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phone. +48 61 6475888

Faculty of Civil and Transport Engineering

Piotrowo 3 str., 60-965 Poznań

Responsible for the course/lecturer:

second person allowed

Prerequisites

KNOWLEDGE: Basics of engineering and computer graphics. Basic knowledge of general mechanics and material strength.

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SKILLS: The ability to use various sources of information, including manuals and technical documentation.

SOCIAL COMPETENCES: The student is able to work in a group, assuming different roles. The student demonstrates independence in solving problems, acquiring and improving his knowledge and skills.

Course objective
Learning the basic tools and methods of mechanical CAD design. Mastering the tools of integrated design.

Course-related learning outcomes
Knowledge
Has ordered basic knowledge of the main divisions of technical mechanics: statics, kinematics and dynamics of a material point and a rigid body.

Has elementary knowledge of the basics of computer science, i.e. computer architecture, binary, decimal and hexadecimal counting system, representation of numbers and graphic characters in computer memory, variable types, general knowledge of low, medium and high level languages used in computer programming, operating systems , databases, RAD development environments, and typical engineering applications.

Is aware of the latest trends in machine construction, i.e. automation and mechatronization, automation of machine design and construction processes, increased safety and comfort of operation, the use of modern construction materials.

Skills
Can create a system diagram, select elements and perform basic calculations using ready-made computational packages of mechanical, hydrostatic, electric or hybrid machine drive system.

Can perform strength calculations of simple frames and load-bearing structures of machines using elementary strength theories.

Can use popular packages for editing technical drawings and 3D modeling to the extent enabling the creation of drawing documentation in accordance with applicable drawing standards and models of virtual machines in three-dimensional space.

Social competences
Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on his own.

Is ready to initiate actions for the public interest.

Is ready to fulfill professional roles responsibly, including:

- observing the rules of professional ethics and requiring this from others,

- caring for the achievements and traditions of the profession.

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Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written credit for the lecture (test). Ongoing assessment of the state of knowledge in the laboratory.

Programme content

Definition of computer aided design. Solid modeling. Technical documentation 3D vs. 2D. Structure parameterization. Variation in the construction process. Using databases of standard elements. 3D simulations. Strength analyzes (FEM). Rapid Prototyping methods. 3D scanning

Teaching methods

Lecture with multimedia presentation

Laboratory - work on a computer in the Inventor environment

Bibliography

Basic

O.C. Zienkiewicz: Metoda Elementów Skończonych. WNT Warszawa 1977

M. Kleiber: Komputerowe Metody Mechaniki Ciał Stałych, PWN 1995, ISBN 83-01-11740-0

Additional

Didactic materials and additional instructions

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	27	1,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests) [1]	48	2,0

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[1] delete or add other activities as appropriate