KARTA PRZEDMIOTU

Nazwa przedmiotu: ***Computer Aided Engineering (ZIPAOZ>SI4CAE19O)***
Nazwa w języku polskim:
Nazwa w jęz. angielskim: ***Computer Aided Engineering***

Dane dotyczące przedmiotu:

Jednostka oferująca przedmiot: Wydział Organizacji i Zarządzania
Przedmiot dla jednostki: Politechnika Śląska

Domyślny typ protokołu dla przedmiotu:

ZAL

Skrócony opis:

The purpose of the course is to familiarize students with the most important applications of computer technology, including information and communication technology to assist in solving engineering problems. The student should acquire knowledge and practical skills to use specialized software in the field of CAD systems. He or she should also be able to select and integrate appropriate ICT tools and technologies to support manufacturing engineering activities. The subject is designed to form the student's attitude characterized by activity and independence in conducting activities in the search for and application of modern IT and ICT solutions to support engineering tasks, in addition, to criticality, independent thinking, decision-making, planning, and organizational skills.

Opis:

A detailed description of the forms of teaching:

1) lectures:

1. Engineering works in the product life cycle: stages of the product life cycle, types of product life.
2. Computer-aided design, part 1: mapping of the structural form and layout of dimensions in CAD systems, drawing technique on layers, menu structure, drawing and editing commands, libraries of symbols and standardized elements,
3. Computer-aided design, part 2. modeling of geometric structural features: types of models, methods of modeling, the structure of the geometric model.
4. Computer-aided design of selected manufacturing technologies: machining, cutting and welding, foundry, cold rolling, and sheet metal bending, programs,
cold rolling and sheet metal bending, CAM programs
5. Industry 4.0, IoT - directions of development and support of engineering tasks.

2) Laboratory:

- Definition of commands and basic operation of the selected CAD system.
- Application of user interface commands of the CAD system
- Application of drawing commands.
- Application of editing commands.
- Application of layers in construction notation.
- Preparation of drawing styles: text styles, dimensioning.
- Preparation of a 2D and 3D construction record of machine elements using drawing and editing commands.

3) Project:
Course objective: To apply the methods and tools of computer-aided engineering to design a selected manufacturing/technological process.

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Number of hours of classes with direct participation of academic teachers or other instructors and students

- Lecture: 30h
- Laboratory: 30h
- Project: 15h

Number of others hours

- Preparation for laboratory classes - 30h
- Project work - 15h
- Literature review - 30h

Literatura:

Computer Aided Design Journal - available: https://www.sciencedirect.com/journal/computer-aided-design/about/aims-and-scope

Lee, J. M. ; Sing, S. L. ; Yeong, W. Y.; Bioprinting of Multimaterials with Computer-aided Design/Computer-aided Manufacturing; International journal of bioprinting, 2020, Vol.6 (1), p.245-24

Guides, tutorials and others available via Internet services

Efekty uczenia się:

Knowledge: knows and understands

K1A_W06 to an advanced degree - selected facts, objects and phenomena and the methods, theories and conditions concerning them explaining the complex relationships between them, constituting basic general knowledge of mechanical engineering --> Lecture

K1A_W10 selected issues in mechanics, strength of materials, construction notation and construction and operation of machinery --> Lecture.

Skills: is able to

K1A_U07 design - according to the given specification - and execute a simple technical system and implement a technological process, using appropriately selected methods, techniques, tools and materials -->Laboratory/Project

K1A_U13 in the identification and formulation of specifications of engineering tasks and their solution:
- use analytical, simulation and experimental methods,
- recognize their system and non-technical aspects, including ethical aspects,
- make a preliminary economic assessment of the proposed solutions and engineering actions taken." --> Lecture/Laboratory/Project

Social competence: is ready to

K1A_K06 cultivate and disseminate patterns of proper conduct in the work environment and beyond, independent make decisions and critically evaluate his/her own actions, the actions of the teams he/she leads and the organizations in which he/she participates, and accept responsibility for the consequences of these actions --> Lecture/Laboratory/Project

Metody i kryteria oceniania:

The final grade is the arithmetic average of grades from all forms of instruction.

LECTURE: Preparation and presentation on the forum on the topic in accordance with the subject of the course.

LABORATORY: The prerequisite for obtaining a positive mark from laboratory classes is the realization of current tasks during the course of classes accession to the practical colloquium and obtaining the minimum score threshold (50%+1pts)

PROJECT: The prerequisite for getting a positive mark from the project classes is to develop and present for evaluation a report according to strictly defined criteria.

Revision credit: conditions identical to those for passing. Two additional correction deadlines are applicable, determined in consultation with interested students.

Przynależność do grup przedmiotów w cyklach:

Opis grupy przedmiotów	Cykl pocz.	Cykl kon.
Przedmioty obowiązkowe ang. semestr 4 (ZIPAOZ>SI-4-19-O)	2020/2021-L	

Punkty przedmiotu w cyklach:

Zarządzanie i Inżynieria Produkcji, stacjonarne I stopnia inżynierskie 7 sem. (ZIPAOZ-SI7)

Typ punktów	Liczba	Cykl pocz.	Cykl kon.
Europejski System Transferu Punktów (ECTS)	5	2020/2021-L	