COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design project (constructions)

Course

Field of study

Mechanical Engineering

Year/Semester

4 / 7

Area of study (specialization)

Construction of machines and devices

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)

Tutorials

Projects/seminars

20

Number of credit points

5

Lecturers

Responsible for the course/lecturer:

PhD Eng. Krzysztof Netter

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Faculty of Mechanical Engineering

Piotrowo street 3, 60 - 965 Poznan

Responsible for the course/lecturer:

Prerequisites

Basic knowledge in the field of theory of machines, machine parts, engineering graphics and other areas of education in the field of study. Basic knowledge of cutting tools and machining, and electrical engineering. Orderly theoretical knowledge in the field of study. Ability to use literature (acquiring knowledge from the indicated sources) and the Internet, has the ability to work in a team. Understanding the need for learning, acquire and improve skills throughout life and the importance of team collaboration.

Course objective

The student should obtain Expanding knowledge in the design of main drives of conventional machine tools and their characteristic assemblies.

Developing students' self-study skills with elements of independent learning and developing technical interests.

Course-related learning outcomes

Knowledge

The student has define the concept of machine tool and main drive.

The student has characterize the main drives of machines and devices, describe the construction solutions used and indicate the improvement mechanisms.

The student has know and understand the basic concepts and principles of industrial property protection and copyright; can use patent information resources.

Skills

Able to design and construct the main drive of a metalworking machine in accordance with the given specification and implement a simple device, object, system or process typical for machine construction, using appropriate methods, techniques and tools.

Social competences

Understand the need for lifelong learning; able to inspire and organize learning process of other people.

Able to cooperate and working in the group, taking different roles.

Is open to discussion of complex technical problems and is capable of communicating its knowledge in an understandable way.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The acquired skills will be verified by developing a complete design according to the received output data of the selected cutting machine: making the required selections and calculations, drawing documentation.

Programme content

Choice of metal cutting machine. Development of the design and construction of the main drive of the selected machine tool, including: selection of the number of teeth of elementary gears, gear ratio chart, calculations of belt transmissions, calculations of gear wheels, arrangement of wheels in a multi-gear reducer, calculations of shafts and ball bearings, calculations for checking spindles. Development of drawing documentation.

Teaching methods

Solving design and construction problems. Searching for sources, individual or team work, discussions.

Bibliography

Basic

Wrotny L. T., Obrabiarki skrawające do metali, WNT, Warszawa 1979.

Honczarenko J., Obrabiarki sterowane numerycznie, WNT , Warszawa 2009.

Kosmol J., Automatyzacja obrabiarek i obróbki skrawaniem, PWN, Warszawa, 2000.

Kosmol J., Serwonapędy obrabiarek sterowanych numerycznie, WNT Warszawa, 1998.

Additional

Books on cutting machine tools and on the design and construction of machine tools.

Scripts, studies on design and construction.

Catalogs, guides.

Internet materials of machine tool manufacturing companies and their assemblies.

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	5,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation for project classes, making calculations, developing drawing documentation) [1]	100	4,0

[1] delete or add other activities as appropriate