



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Machines and technical devices

Course

Field of study

Education in Technology and Informatics

Area of study (specialization)

–

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

3/6

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

PhD Eng. Krzysztof Netter

Responsible for the course/lecturer:

e-mail: krzysztof.netter@put.poznan.pl

Faculty of Mechanical Engineering

Piotrowo street 3, 60 - 965 Poznan

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 knowledge of technological machines tools and NC machine tools construction and exploitation principles, and their kinematic chains, forming systems, drives and control systems.



Course-related learning outcomes

Knowledge

The student has general knowledge of manufacturing technologies used mainly in enterprises of the mechanical industry and which refers to metallurgy and casting, plastic forming, plastics processing, heat treatment, heat and chemical treatment, welding, swarf machining, grinding and eroding.

The student has detailed knowledge relating to fundamental and auxiliary processes in the construction of machines. Has knowledge allowing to design production flow (forms of production flow). Has knowledge indispensable for organizing the work of a production system depending on its type. Has knowledge indispensable for the assessment of the work of a production system. Has knowledge indispensable for developing a technological process of typical parts of machines. Has knowledge enabling to evaluate the capabilities of a given process. Knows systems of computer aided process design

Skills

Drawing upon norms, procedures and instructions, can write a simple program for the operation of a numerical control machine tool.

Able to select and apply manufacturing technologies to shape the form, structure and properties of products.

Able to select technological machines and devices to realize products manufacturing processes, analyze and evaluate their construction taking into account the principles of ergonomics, select machine parts, plan and supervise maintenance tasks to ensure reliable operation of machines and devices.

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:

Acquired knowledge is verified by a exam. The exam consists of 8 open questions. Credit in the case of correct answers to min. half of the questions (50% threshold).

Programme content

Division and comparison of conventional machine tools and NC machine tools. Machine tool drives. Characteristics of drives and electric motors. Universal machine tools. Unit-construction machines. Machining centers and machine tool lines. Gear generating machines. Electrical Discharge Machining machines.

Teaching methods



Multimedia presentation, presentation illustrated with examples given on the board, discussion.

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

Poradnik inżyniera mechanika. T.3. Zagadnienia technologiczne, rozdz. III, VI, VII. WNT, Warszawa 1970.

Kosmol J., Napędy mechatroniczne, WNT Warszawa, 2013.

Pritschow G., Technika sterowania obrabiarkami i robotami przemysłowymi. Oficyna Wydawnicza Politechniki Wrocławskiej, 1995.

Pająk E., Zaawansowane technologie współczesnych systemów produkcyjnych, Wydawnictwo Politechniki Poznańskiej, Poznań 2000.

Skoczyński W., Sensory w obrabiarkach CNC, Wydawnictwo Naukowe PWN SA, Warszawa, 2018.

Breakdown of average student's workload

	Hours	ECTS
Total workload	35	2,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation for tests, report preparation) ¹	15	1,0

¹ delete or add other activities as appropriate