COURSE DESCRIPTION CARD - SYLLABUS

Course name
Modular design

Course

Field of study
Mechanical Engineering

Year/Semester
2/3

Area of study (specialization)

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars
15

Number of credit points

1

Lecturers

Responsible for the course/lecturer:
dr hab. inż. Andrzej Gessner

Responsible for the course/lecturer:

Prerequisites

The student starting this subject should have basic knowledge in the field of machine construction, principles of creating technical drawings, selection of construction materials and basics of numerically controlled machine tools, automation, programming and technology. He should be able to think logically, know the basics of using any design support system, use information obtained from the internet, and understand the need to learn and acquire new knowledge.

Course objective

The aim of the course is to learn the principles of machine and device design using standard components.

Course-related learning outcomes

Knowledge

1. The student should be able to identify standard elements in devices.

2. The student should be able to list the goals and principles of standardization in machine construction.

3. The student should be able to define the rules for selecting standard elements.

Skills

1. Student knows how to design a device based on available standard elements

2. Student is able to construct a device divided into executive modules.

3. Student knows how to develop construction documentation.

Social competences

1. Student is able to cooperate in a group.

2. Student understands the need for lifelong learning due to the constant development of modularity in machine construction.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Project: Credit based on an individual project.

Programme content

As part of the course, students will learn:

- modularity in machine and device construction,

- objectives and principles of standardization of main components in the series of machines and devices,

- machinery and equipment design oriented towards the use of standard components,

- principles of selection of standard components (guides, ball screw transmissions, clutches, servo drives, bearings, pumps, fasteners, consumables, additional equipment),

- the cost aspect of modularity.

Teaching methods

Project: developing an individually assigned project topic.

Bibliography

Basic

1. Katalogi producentów komponentów wykorzystywanych w maszynach i urządzeniach (Hiwin, BoschRexroth, THK, Star, Rotex, SKF, INA, FAG, Siemens, Heidenhain, Fanuc) - źródła dostępne w internecie.

2. Katalogi firm produkujących obrabiarki - źródła dostępne w internecie.

Additional

1. Grajdek R.: Projektowanie obrabiarek. Napęd główny obrabiarek ogólnego przeznaczenia. Wydanie drugie poprawione i uzupełnione. Wydawnictwo Politechniki Poznańskiej, 2003.

2. Wrotny L. T.: Podstawy konstrukcji obrabiarek, WNT, Warszawa 1973.

3. Wrotny L. T.: Projektowanie obrabiarek, WNT, Warszawa 1986.

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,0
Classes requiring direct contact with the teacher	15	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	15	0,0

[1] delete or add other activities as appropriate