COURSE DESCRIPTION CARD - SYLLABUS

Course name
Programming of machine tools

Course

Field of study	Year/Semester
Mechatronics	2/3
Area of study (specialization)	Profile of study
Mechatronic design of machines and vehicles	general academic
Level of study	Course offered in
Second-cycle studies	Polish
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	15	
Tutorials	Projects/seminars	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

PhD Eng. Wojciech Ptaszynski

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Faculty of Mechanical Engineering

ul. Piotrowo 3, 60-965 Poznan

Responsible for the course/lecturer:

Prerequisites

Basic in the field of machining and construction of numerically controlled machine tools. The ability to think logically, read technical drawings. Understand the need to learn and acquire new knowledge in the field of numerically controlled machine tools.

Course objective

Learning methods of programming numerically controlled machine tools using advanced control system software and the basics of operating these machines

Course-related learning outcomes

Knowledge

The student should know the basic ways of programming machine tools. The student should know the

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basic addresses and functions of the machining program. The student should know the basic symbols used in numerically controlled machine tools.

Skills

The student can work in a group. The student is aware of the possibilities of modern numerically controlled machine tools. The student is able to use advanced numerically controlled machine tools.

Social competences

Student is able to choose tools and machining parameters. Student is able to develop a part machining program on a milling and lathe. The student is able to choose the appropriate functions and machining cycles for a given machining task.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Credit based on a test consisting of five general questions. Credit in the case of a correct answer to min. 3 questions

Laboratory: Assessment based on an oral or written answer regarding the content of each laboratory exercise. In order to get a credit for the laboratories, all exercises must be passed - a positive grade from the answer.

Programme content

Lecture:

1. Introduction to machine tool programming, types and division of control systems

2. Basic words and blocks of the machining program

3. Programming machining using tool radius compensation

4. Programming machining using machining cycles

5. Programming machining in the ShopMill system

6. Programming numerically controlled lathes

7. Programming the lathe in the ShopTrain system

8. Programming machine tools 3 + 2 axes

Lab:

1. Programming the processing of simple outlines (paths)

2. Programming machining using tool radius compensation

3. Programming of machining using machining cycles

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4. Programming machining in the ShopMill system

5. Programming multi-stage shaft machining in ISO format

6. Programming the lathe in the ShopTrain system

Teaching methods

Lecture illustrated by multimedia presentations.

Laboratory exercises performed at individual computer stations equipped with CNC machine tool software

Bibliography

Basic

1. Grzesik W., Niesłony P., Bartoszuk M.: Programowanie obrabiarek NC/CNC. WNT 2006.

2. Proste toczenie przy pomocy ShopTurn. Siemens 2004

3. Materiały dydaktyczne PP do przedmiotu Programowanie obrabiarek CNC

Additional

1. Feld. M.: Projektowanie i automatyzacja procesów technologicznych. WNT 1994.

2. Kosmol J. : Automatyzacja obrabiarek i obróbki skrawaniem. WNT 2000.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	20	1,0

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[1] delete or add other activities as appropriate