COURSE DESCRIPTION CARD - SYLLABUS

Course name
Tool systems [N2ZiIP2>SN]

Course

Field of study
Management and Production Engineering

Year/Semester
1/2

Area of study (specialization)
–

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
8

Laboratory classes
8

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of the methods and kinematics of cutting, the cutting tools used and the construction of machine tools. The ability to operate simple technical devices, capability of making use of information retrieved from different sources.

Course objective

Getting to know the current solutions of tool systems and their exploitation, setup of tools for machining operations, implementation of new tooling systems in manufacturing plant.

Course-related learning outcomes

Knowledge:
The student knows how to recognize basic types of cutting tool holding systems and can describe its exploitation proprieties.
The student knows how to describe and identify types of tools and cutting tool materials according to ISO standard.

Skills:

The student is capable of analysis of economical viability of introduced tooling system.
The student is capable of choosing proper tooling system for given machining operation.
The student is capable of applying computer software to aid tool management and selection process.

Social competences:
The student acquires skills of finding solution for technical problems by himself/herself through search of knowledge in literature and on the Internet.
The student acquires skills of teamwork and forming inquiry questions.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lectures is verified at the end of the semester in the form of an exam. The exam consists of 13 short theoretical and problem questions. The pass threshold is 50%.
Assignment of grades to percentage ranges of results: <90–100> very good; <80–90) good plus; <70–80) good; <60–70) satisfactory plus; <50–60) satisfactory; <0–50) unsatisfactory.
Skills acquired in the laboratory classes are verified by evaluating student activity and skills to solution basic problems. The skill to present and analyze research results is checked in the form of experience reports.

Programme content

1. Review of tool systems used in modern machine tools for machining.
2. Economical use of tool equipment in various technological processes.

Course topics

Scope of lecture:
- design and classification of cutting tools based on different criteria,
- identification of cutting tools, cutting wedge and cutting materials according to ISO standard,
- exploitation economics of tools with indexable inserts,
- purpose, requirements and economical aspects of tooling systems applications,
- overview of design of tooling systems and recommendation for proper tooling system selection,
- procedures for preparing tools for machining operations: presetting and tools measurement,
- identification and coding of tools, tool data management in manufacturing systems,
- selection of tooling system for HSM machining - preparation of tool for HSM machining.

Laboratory classes consist of set of exercises on which students: familiarize themselves with design of different solutions for modular tooling systems and select system based on different criteria, conduct exploitation analysis of tooling systems, learn how to externally preset dimension for modular tool, how to identify and code tools and cutting materials according to ISO standard, familiarize themselves with IT systems for tool management.

Teaching methods

Lecture: multimedia presentation illustrated with examples, animations and short films, discussion.
Laboratory classes: execution of experimental studies, solving problem, discussion, teamwork.

Bibliography

Basic:
Cichosz P., Narzędzia skrawające. Wydawnictwa Naukowo-Techniczne, Warszawa 2006.
Kosmol J., Automatyzacja obrabiarek i obróbki skrawaniem. Wydawnictwa Naukowo-Techniczne, Warszawa 2000.
Meldner B., Darlewski J., Narzędzia skrawające w zautomatyzowanej produkcji. Wydawnictwa Naukowo-Techniczne, Warszawa 1991.

Additional:
Honczarenko J., Elastyczna automatyzacja wytwarzania. Obrabiarki i systemy obróbkowe. Wydawnictwa Naukowo-Techniczne, Warszawa 2000.
Stós J., Składane systemy narzędziowe. Prace Instytutu Obróbki Skrawaniem. Seria: Opracowania analityczno-syntetyczne, Nr1/1991, Kraków 1991.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	16	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	34	1,50