



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Manufacturing techniques

Course

Field of study

Year/Semester

Transport

1/2

Area of study (specialization)

Profile of study

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

0

0

Tutorials

Projects/seminars

0

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

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Wydział Inżynierii Materiałowej

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Prerequisites

Knowledge: The student has basic knowledge of physics, mathematics and mechanics.

Skills: The student is able to use the acquired knowledge to analyze specific manufacturing techniques and knows how to use information obtained from the library and the Internet.

Social competences: The student shows independence in solving problems, acquiring and improving acquired knowledge and skills, understanding the need to learn.

Course objective

Przedstawienie podstawowych technik wytwarzania. Zapoznanie przyszłych inżynierów z kinematyką,



możliwościami technologicznymi, obrabiarkami i narzędziami przy różnych sposobach skrawania. Poznanie podstaw sposobu obliczania parametrów i mocy skrawania oraz doboru materiału ostrza.

Course-related learning outcomes

Knowledge

The student has an ordered, theoretically founded general knowledge of technology, transport systems and various means of transport

The student has ordered and theoretically founded general knowledge in the field of key issues of technology and detailed knowledge in the field of selected issues in this discipline of transport engineering

Skills

The student is able, when formulating and solving tasks in the field of transport, to apply appropriately selected methods, including analytical, simulation or experimental methods

The student is able - in accordance with the given specification - to design (create a model of a fragment of reality), formulate a functional specification in the form of use cases, formulate non-functional requirements for selected quality characteristics) and implement a device or a widely understood system in the field of means of transport, using appropriate methods, techniques and tools

Social competences

The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Passing the lecture on the basis of a written test.

Programme content

1. Classification of manufacturing techniques.
2. Basic concepts of manufacturing techniques: plastic working, casting, machining and erosion, assembly techniques.
3. Kinematics, technological possibilities, machine tools and tools for various cutting methods:
 - a. performed with tools of defined geometry (turning, milling, drilling operations, drawing e.g. splines and chiselling keyways in holes, methods of making threads and teeth),
 - b. performed with tools with undefined geometry (grinding, ultrasonic assisted grinding, honing of engine cylinders, oscillatory superfinishing, lapping).
4. Tool materials.



5. Basics of calculating parameters and cutting power.

5. Electro-erosion (drilling and cutting), electrochemical and jet-erosive machining (cutting with laser, water jet and abrasive jet, plasma, laser surface structuring)

Teaching methods

The lecture is illustrated with a multimedia presentation containing the discussed program content

Bibliography

Basic

1. Erbel J. (red.): Encyklopedia technik wytwarzania w przemyśle maszynowym tom II. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2001
2. Filipowski R., Marciniak.: Techniki obróbki mechanicznej i erozyjnej. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2000
3. Olszak W.: Obróbka skrawaniem. WNT Warszawa 2008.
4. Żebrowski H. : Techniki wytwarzania. Obróbka wiórowa, ścierna i erozyjna. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2004

Additional

1. Cichosz P.: Narzędzia skrawające. WNT. Warszawa 2008.
2. Czasopisma naukowo-techniczne: Mechanik, Przegląd Mechaniczny, Werkstatt und Betrieb
3. Dul-Korzyńska B.: - Obróbka skrawaniem i narzędzia. Oficyna Wydawnicza Politechniki Rzeszowskiej 2009.
4. Schneider G.: Cutting tool applications. ASM International 2002
5. Sobolewski J.Z. (red.): Projektowanie technologii maszyn. Oficyna Wydawnicza Politechniki Warszawskiej, Wydział Samochodów i Maszyn Roboczych, Warszawa 2007.
6. Zawora J.: Podstawy technologii maszyn. WSiP 2007.

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	15	0,5

¹ delete or add other activities as appropriate