POZNAN UNIVERSITY OF TECHNOLOGY

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Specifying product geometry [S2MiBM2>SGW]

Course

Field of study	Year/Semester
Mechanical Engineering	1/1
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
second-cycle	Polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other
15	0	0
Tutorials	Projects/seminars	
15	0	

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Knowledge: Basic knowledge of elementary geometry and stereometry. Information on machine science, machine parts and technical drawing. Skills: Ability to solve problems based on knowledge, ability to obtain information from indicated sources. Ability to create technical documentation for the product. Social competences: Understanding the need to expand one's knowledge and develop skills, as well as independence and consistency in carrying out tasks and solving problems. Willingness to cooperate within a team.

Course objective

1. Expanding and supplementing knowledge in the field of dimensional and geometric specification of products, standardization, tolerancing and tolerance calculation methods used in construction and technology, as well as computer-aided tolerance analysis. 2. Developing teamwork skills in students.

Course-related learning outcomes

Knowledge:
1. Has basic knowledge of standardized rules for writing product geometry specifications.
2. Has detailed knowledge of metrology and measurement systems.

3. Has the knowledge necessary to understand the social, economic, legal and other non-technical conditions of engineering activities and to take them into account in engineering practice.

Skills:
1. Is able to evaluate various design variants and identify the optimal solution taking into account many different criteria.
2. Is able to work individually and in a team, use information and communication techniques appropriate to perform tasks, communicate using various techniques in a team and environment, also in English or another foreign language recognized as the language of international communication in the field of mechanics and machine construction.

Social competences:
1. Is ready to critically evaluate the knowledge acquired and the content received.
2. Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to seek the opinion of experts in case of difficulties in solving the problem independently.
3. Is aware of the social role of a technical university graduate, and especially understands the need to formulate and convey information and opinions on technological achievements to the public.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Written exam in the form of open tasks or multiple choice test.
Completion of the exercises: Assessment based on the grade from the final examination (credit test).
Grades: very good - if the ratio of sums of achieved and total points is bigger than 90,1%; good plus - if the ratio of sums of achieved and total points is between 80,1-90%; good - if the ratio of sums of achieved and total points is between 70,1-80%; satisfactory plus - if the ratio of sums of achieved and total points is between 60,1-70%; satisfactory - if the ratio of sums of achieved and total points is between 50,1-60%; if the sum is smaller than 50% - unsatisfactory.

Programme content

Standards and principles for marking tolerances and geometric product specifications (GD&T and GPS).

Course topics

GPS standards (Geometric Product Specification); economic conditions - quality and costs; systems of tolerances and fits, geometric tolerances - types, marking, interpretation; tolerances in various technological processes (castings, welded structures); statistical tolerance of machine units; thread tolerances; cone tolerances; analysis and synthesis of dimensional chains; control of dimensional and geometric deviations; differences between ISO, DIN, ASME standards; tolerance analysis in CAD systems.

Teaching methods

Lecture: Multimedia presentation with examples drawn on the blackboard.
Exercises: performing tasks, problem method, project method.

Bibliography

Basic:
1. Humienny Z., Białas S. Specyfikacje geometrii wyrobów (GPS) : wykład dla uczelni technicznych; Oficyna Wydawnicza Politechniki Warszawskiej, 2001. 2. Białas S., Humienny Z. Kiszka K., Metrologia z podstawami specyfikacji geometrii wyrobów (GPS), Oficyna Wydawnicza Politechniki Warszawskiej, 2021 3. Jezierski J. Kowalik M. i inni, Analiza tolerancji w konstrukcji i technologii maszyn - zbiór zadań, WNT 2010r.
4. Dobrzański T., Rysunek techniczny maszynowy, WNT, W-wa 1997.
5. Lewandowski T., Rysunek techniczny dla mechaników, WSiP, W-wa 2009.
6. Bajkowski J., Podstawy zapisu konstrukcji, Oficyna Wyd. Polit. Warszawskiej, 2014

Additional:
1. Poradnik Mechanika, Wydawnictwo REA, Warszawa 2020r.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00