

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Surface Engineering		Code 1010632211010610430
Field of study Mechanika i budowa maszyn	Profile of study (general academic, practical) general academic	Year /Semester 1 / 1
Elective path/specialty Gas technology and renewable energy	Subject offered in: English	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: - Laboratory: - Project/seminars: -		No. of credits 1
Status of the course in the study program (Basic, major, other) basic		(university-wide, from another field) university-wide
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 1 100% 1 100%
Responsible for subject / lecturer: dr inż. Marta Paczkowska email: marta.paczowska@put.poznan.pl tel. +4861 665-5906 Machines and Transport ul. Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student is obligated to know about basic sciences like physics, chemistry and subjects carried out in I cycle of study like physical chemistry, thermodynamics, material engineering, mechanic, materials durability, machine designing.
2	Skills	Student should have general skills of problem identification, methods of their solving and skills of engineering tasks solving. Student should understand basic phenomenon taking place in solid states, and to be able to identify and characterized them.
3	Social competencies	Student shows the willingness of improvement of the knowledge of interdisciplinary subjects. Student wants to getting to know about new technologies and engineering solutions.
Assumptions and objectives of the course: The aim of the course: ?Surface engineering? is getting to let student gain important knowledge of material engineering in machines range, namely with designing, researching and application of surface layer and coatings.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student knows surface layer construction, its types, properties and applications - [K2A_W07] 2. Student knows the influence of the surface treatment on microstructure of surface layer in machine made of different materials. Additionally student knows application of particular treatment to specific machine parts. [K2A_W07] - [K2A_W07] 3. Student knows different methods of coatings and surface layer production as well as methods of their investigation - [K2A_W07]		
Skills:		
1. Student is able to use information got during this course to technical problems solving in machine designing range - [T2A_U09] 2. Student is able to propose appropriate surface treatment to special requirements of work conditions of particular machine parte made of specified material - [T2A_U09] 3. Student is able to match appropriate surface layer investigation method to assess its specified properties - [T2A_U09] 4. Student understands relations between surface treatment and surface layer microstructure, surface layer microstructure and its properties, surface layer properties and possibility of its application to particular case. - [K2A_W07]		
Social competencies:		

1. Student understands need and know possibilities of continuous of knowledge widening and further training - [T2A_K01]
2. Student shows understanding the relations taking place between different aspects of surface engineering and understands interdisciplinary character of this filed of science - [T2A_K06]
3. Student understands mutual influence between surface engineering and other fields of science - [T2A_K02]
4. Student shows the ability of the solving problems in the range of surface engineering and has ability to executing it by his/her own or in group - [T2A_K03]

Assessment methods of study outcomes		
-Project task -Oral examination -Written examination		
Course description		
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Basic bibliography:		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Lecture participation	15	
2. Consolidation of lecture content	5	
3. Consultations	1	
4. Preparation for assessment	2	
5. Assessment participation	1	
Student's workload		
Source of workload	hours	ECTS
Total workload	23	1
Contact hours	1	1
Practical activities	0	0