



1. Subject name	Surface Engineering				
2. Subject name in Hungarian	Felületi technológiák				
3. Code	BMEKOGGM647	4. Evaluation type	exam grade	5. Credits	4
6. Weekly contact hours	2 (10) Lecture	0 (0) Practice	2 (11) Lab		
7. Curriculum	Vehicle Engineering MSc (J)	8. Role	Specialization (sp) at Vehicle Engineering MSc (J)		
9. Working hours for fulfilling the requirements of the subject					120
Contact hours	56	Preparation for seminars	18	Homework	12
Reading written materials	20	Midterm preparation	4	Exam preparation	10
10. Department	Department of Automotive Technologies				
11. Responsible lecturer	Dr. Markovits Tamás				
12. Lecturers	Dr. Markovits Tamás, dr. Takács János, Hlinka József				
13. Prerequisites					
14. Description of lectures					
Interpretation of surface properties. Function and role in the vehicle constructions. Surface preparation and modification processes. Plasma processes and laser technologies (laser basics, beam sources, beam guiding, laser-material interaction, laser surface treatments). Advanced investigation techniques of layers and surfaces.					
15. Description of practices					
16. Description of laboratory practices					
Investigation of laser technologies (preparation, interactions, quality, safety). Wetting tests. Surface examination methods.					
17. Learning outcomes					
A. Knowledge <ul style="list-style-type: none">• Understanding the role of the presented surface properties and technologies. B. Skills <ul style="list-style-type: none">• Ability to develop the processes. C. Attitudes <ul style="list-style-type: none">• Openness to the new possibilities of the field. D. Autonomy and Responsibility <ul style="list-style-type: none">• Participate in individual problem solving.					
18. Requirements, way to determine a grade (obtain a signature)					
During the semester 1 midterm test has to be completed with more the 50 % of the maximal points. The requirements for obtaining the signature are the taking part on labs, submit the independent task in satisfactory level, completing the midterm test. The grade can be obtained from the written exam.					
19. Opportunity for repeat/retake and delayed completion					
The midterm test and the submission of individual task can be retaken once.					
20. Learning materials					
Slides and presentation notes					
Effective date	10 October 2019	This Subject Datasheet is valid for		Inactive courses	