



Budapest University of Technology and Economics

Faculty of Transportation Engineering and Vehicle Engineering

1. Subject name	Engine design I.				
2. Subject name in Hungarian	Motortervezés I.				
3. Code	BMEKOGGM670	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	0
Reading written materials	28	Midterm preparation	8	Exam preparation	10
10. Department	Department of Automotive Technologies				
11. Responsible lecturer	Dr. Zöldy Máté				
12. Lecturers	Nyerges Ádám, Vass Sándor, Bárdos Ádám				
13. Prerequisites					
14. Description of lectures					
Grouping motor simulations. Acoustic motor simulation models, basic equations. Flow, pressure loss and heat transfer in suction and exhaust systems. Acoustic effects and their utilization. Flow junctions. Valve flows, geometry and construction of the combustion chamber. Aspects of hole-stroke ratio, valve dimensions and compression ratio selection. Modeling of combustion processes, main parameters. Laws of Wall Loss. Modeling the motor's mechanical loss. Determining the engine fill pressure and the required fuel dose to achieve the specified power target. Fitting and cooperating with the internal combustion engine. Reduced Characteristics of Uploaders. Regulation of Uploaders. Mechanical and thermal stress on the engine piston. Design and geometry of the piston. The main aspects and methods of scaling. Plunger studs and loads, design procedures.					
15. Description of practices					
16. Description of labortory practices					
Planning the combustion space of the engine to be designed, preparing the main workflow simulation, and analyzing the piston's structure.					
17. Learning outcomes					
A. Knowledge <ul style="list-style-type: none">• Knowledge of vehicle testing methods. B. Skills <ul style="list-style-type: none">• Ability to develop Vehicle Test Methods. C. Attitudes <ul style="list-style-type: none">• Openness to new opportunities in the field. D. Autonomy and Responsibility <ul style="list-style-type: none">• Participate in solving independent task.					
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 conditions for obtaining the signature are the completing the midterm test. Final grade equals to the result of the written exam.					
19. Opportunity for repeat/retake and delayed completion					
The midterm test can be retaken once.					
20. Learning materials					
Slides and presentation notes					
Effective date	10 October 2019	This Subject Datasheet is valid for		Inactive courses	

