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
- Knowledge of vehicle testing methods.

B. Skills
- Ability to develop Vehicle Test Methods.

C. Attitudes
- Openness to new opportunities in the field.

D. Autonomy and Responsibility
- 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