1. Subject name	**Mechanics of superstructure materials**				
2. Subject name in Hungarian	Szerkezeti anyagok mechanikája				
3. Code	**BMEKOJSM663**	**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**	20
Reading written materials	12	**Midterm preparation**	4	**Exam preparation**	10
10. Department	**Department of Railway Vehicles and Vehicle System Analysis**				
11. Responsible lecturer	Dr. Béda Péter				
12. Lecturers	Dr. Béda Péter				
13. Prerequisites					

14. Description of lectures

Material modelling. Role of the constitutive equations, their build up and construction. Material law types. Types of behaviour based on material science experiments. Presentation of elastic and plastic bodies, methods for studies. Rheological models, examples of application.

15. Description of practices

16. Description of labortory practices

Individual and guided practice lessons

17. Learning outcomes

A. Knowledge
- knows the notion and composition of a constitutive equation
- knows the material types and the matematical tools needed for their description
- Knows the modern measuring processes in material study
- knows the mathematica tools to describe elastic and plastic bodies
- knows the rheological models and their typical field of application

B. Skills
- is able to identify the type of a given material and to choose the appripriate measuring process
- is able to discuss the result of a measurement process
- is able to assemble the appropriate constitutive equation based on measurement results
- is able to identify the material equation's constants from measurement data

C. Attitudes
- the student makes an effort to gather all the available informations in a given domain
- cooperates with his fellow students and the teacher
- is open minded towards new and innovative ideas and researches
- uses informatical and computational devices for his work

D. Autonomy and Responsibility
- the student is conscient about his responsibility towards the society and his company
- asks for the colleagues' expertise and judgement when working
- considers challenges with responsibility

18. Requirements, way to determine a grade (obtain a signature)

The requirement of the signature determined by the points from 1 semestrial homework, and additionally 1 non-compulsory test. Final grade from exam (100%)

19. Opportunity for repeat/retake and delayed completion

Second test possibility for those not present on the test, possibility of delayed deadline for homework

20. Learning materials

Lecture notes

Effective date	10 October 2019	**This Subject Datasheet is valid for**	Inactive courses