Continuum Mechanics

1. Subject name	Continuum Mechanics				
2. Subject name in Hungarian	Kontinuum mechanika				
3. Code	BMEKOMED030	4. Evaluation type	exam grade	5. Credits	4
6. Weekly contact hours	2 (0) Lecture	1 (0) Practice	0 (0) Lab		
7. Curriculum	PhD Programme	8. Role	Basic course		
9. Working hours for fulfilling the requirements of the subject					120
Contact hours	42	Preparation for seminars	14	Homework	28
Reading written materials	12	Midterm preparation	0	Exam preparation	24
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

Motion law, shape modification gradient and tensors. State of velocity, state of acceleration. Time derivatives of material. Shape variation velocity and vortex tensor. Transformation of surface element and volume element of a material. State of stress, stress tensors. Cauchy's motion equations of I and II kind. Mass conservation, continuity. Basics of thermodynamics. Principle of virtual work. Objective time derivative. Theroy of material laws. Fluids. Elastic, hipoelastic and hiperelastic bodies, elasto-plastic bodies.

15. Description of practices

Examples from the topics of the lessons.

16. Description of labortory practices

17. Learning outcomes

A. Knowledge
- Methods of the continuum mechanics.

B. Skills
- Description of a mechanical system in time domain, model building.

C. Attitudes
- Being open to understand and learn novelties on that given domain.

D. Autonomy and Responsibility
- Evaluation and choice of optimal model element.

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

Semester note upon succesful realisation of the homework and an oral exam.

19. Opportunity for repeat/retake and delayed completion

Essay secondary deadlines precised in the lessons requirements.

20. Learning materials

Effective date	27 November 2019	This Subject Datasheet is valid for	Inactive courses