



<b>1. Subject name</b>	<b>Continuum Mechanics</b>				
<b>2. Subject name in Hungarian</b>	Kontinuum mechanika				
<b>3. Code</b>	<b>BMEKOMED030</b>	<b>4. Evaluation type</b>	exam grade	<b>5. Credits</b>	4
<b>6. Weekly contact hours</b>	2 (0) Lecture	1 (0) Practice	0 (0) Lab		
<b>7. Curriculum</b>	PhD Programme	<b>8. Role</b>	Basic course		
<b>9. Working hours for fulfilling the requirements of the subject</b>					120
<b>Contact hours</b>	42	<b>Preparation for seminars</b>	14	<b>Homework</b>	28
<b>Reading written materials</b>	12	<b>Midterm preparation</b>	0	<b>Exam preparation</b>	24
<b>10. Department</b>	<b>Department of Railway Vehicles and Vehicle System Analysis</b>				
<b>11. Responsible lecturer</b>	Dr. Béda Péter				
<b>12. Lecturers</b>	Dr. Béda Péter				
<b>13. Prerequisites</b>					
<b>14. Description of lectures</b>					
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. Theory of material laws. Fluids. Elastic, hypoelastic and hyperelastic bodies, elasto-plastic bodies.					
<b>15. Description of practices</b>					
Examples from the topics of the lessons.					
<b>16. Description of laboratory practices</b>					
<b>17. Learning outcomes</b>					
A. Knowledge <ul style="list-style-type: none"> <li>• Methods of the continuum mechanics.</li> </ul> B. Skills <ul style="list-style-type: none"> <li>• Description of a mechanical system in time domain, model building.</li> </ul> C. Attitudes <ul style="list-style-type: none"> <li>• Being open to understand and learn novelties on that given domain.</li> </ul> D. Autonomy and Responsibility <ul style="list-style-type: none"> <li>• Evaluation and choice of optimal model element.</li> </ul>					
<b>18. Requirements, way to determine a grade (obtain a signature)</b>					
Semester note upon successful realisation of the homework and an oral exam.					
<b>19. Opportunity for repeat/retake and delayed completion</b>					
Essay secondary deadlines precised in the lessons requirements.					
<b>20. Learning materials</b>					
<b>Effective date</b>	27 November 2019	<b>This Subject Datasheet is valid for</b>		Inactive courses	