


Data:	KOTM. MA. Nr. 3120 / Examination number: 41907	Version: 18.05.2017 	Start Year: SoSe 2018
Module Name:	<b>Continuum Mechanics</b>		
(English):			
Responsible:	<a href="#">Kiefer, Björn / Prof. PhD.</a>		
Lecturer(s):	<a href="#">Kiefer, Björn / Prof. PhD.</a>		
Institute(s):	<a href="#">Institute of Mechanics and Fluid Dynamics</a>		
Duration:	1 Semester(s)		
Competencies:	Students will elevate their understanding of the mathematical foundations of continuum solid mechanics. Moreover, they will be familiar with classical theoretical approaches that describe the kinematics, kinetics and constitutive behavior of three-dimensional continua at small and large deformations, including the governing balance laws. The successful participant will be able to apply this knowledge to the modeling of specific problems in geometrically and physically nonlinear solid mechanics.		
Contents:	<p>Most important ingredients are:</p> <ul style="list-style-type: none"> <li>• tensor algebra and analysis</li> <li>• balance laws (mass, momentum, energy, entropy)</li> <li>• thermodynamic consistency</li> <li>• spatial and material descriptions</li> <li>• kinematics of continua at finite deformations</li> <li>• definition of various stress measures</li> <li>• constitutive theory</li> </ul>		
Literature:	<p>P. Chadwick: Continuum Mechanics: Concise Theory and Problems, Dover Publications, 1999  Gurtin, Fried, Anand: The Mechanics and Thermodynamics of Continua, Cambridge University Press, 2009  Holzapfel: Nonlinear Solid Mechanics: A Continuum Approach For Engineering. John Wiley &amp; Sons, 2000  Lai, Rubin, Krempl: Introduction to Continuum Mechanics. Butterworth-Heinemann, 1993  Malvern: Introduction to the Mechanics of a Continuous Medium, Prentice Hall, 1969</p>		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Taught in English and German. / Exercises (1 SWS)		
Pre-requisites:	<b>Recommendations:</b> Basic knowledge in engineering mechanics		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: MP/KA (KA if 10 students or more) [MP minimum 30 min / KA 120 min] Possible in German.		
Credit Points:	4		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): MP/KA [w: 1]		
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies. To help deepen the understanding of the subject matter, (voluntary) homework problems are given out along with the exercise sheets.		