

Data:	PLAS. MA. Nr. 3216 / Examination number: 44701	Version: 12.07.2016	Start Year: WiSe 2016
Module Name:	<b>Plasticity</b>		
(English):			
Responsible:	<a href="#">Kiefer, Björn / Prof. PhD.</a>		
Lecturer(s):	<a href="#">Budnitzki, Michael / Dr.-Ing.</a>		
Institute(s):	<a href="#">Institute of Mechanics and Fluid Dynamics</a>		
Duration:	1 Semester(s)		
Competencies:	<p>Students understand theoretical concepts and fundamental ideas that are important for advanced treatment of nonlinear constitutive laws for solids from the viewpoint of thermomechanics. Particular emphasis is placed on the formulation of rate independent inelasticity. They can apply this knowledge to new constitutive material behaviour. Furthermore, they acquire relevant knowledge important for numerical implementation of such constitutive laws.</p>		
Contents:	<p><b>Most important ingredients:</b></p> <ul style="list-style-type: none"> <li>• thermomechanics of solids: <ul style="list-style-type: none"> <li>◦ thermostatics, thermodynamics with internal variables</li> <li>◦ thermoelasticity</li> </ul> </li> <li>• small-strain elastoplasticity: <ul style="list-style-type: none"> <li>◦ principle of maximum dissipation, stability, particular cases of elastoplastic media</li> <li>◦ plastic flow from the point of view of convex analysis</li> </ul> </li> <li>• elastoplasticity at finite deformations: <ul style="list-style-type: none"> <li>◦ kinematics, thermodynamics, principles of material theory</li> </ul> </li> </ul>		
Literature:	<p>J. Lubliner: Plasticity Theory  G. A. Maugin: The Thermomechanics of Plasticity and Fracture  W. Han and B. D. Reddy: Plasticity  H. Ziegler: An Introduction to Thermomechanics  P. Haupt: Continuum Mechanics and Theory of Materials  Ottosen and Ristinmaa: "The Mechanics of Constitutive Modeling"  J. Lemaitre and J.-L. Chaboche: "Mechanics of Solid Materials"</p>		
Types of Teaching:	<p>S1 (WS): Lectures (2 SWS)  S1 (WS): Exercises (1 SWS)</p>		
Pre-requisites:	<p><b>Mandatory:</b>  <a href="#">Continuum Mechanics, 2016-07-11</a>  or equivalent</p>		
Frequency:	yearly in the winter semester		
Requirements for Credit Points:	<p>For the award of credit points it is necessary to pass the module exam.  The module exam contains:  KA [120 min]</p>		
Credit Points:	4		
Grade:	<p>The Grade is generated from the examination result(s) with the following weights (w):  KA [w: 1]</p>		
Workload:	The workload is 120h. It is the result of 45h attendance and 75h self-studies.		