

<b>Advanced Constitutive Models for Geomaterials</b>					
<b>Module-No./Abbreviation</b>	<b>Credits</b>	<b>Workload</b>	<b>Term</b>	<b>Frequency</b>	<b>Duration</b>
CE-W06/ACMG	3 CP	90 h	2 <sup>nd</sup> Sem.	Summer term	1 Semester
<b>Courses</b> Advanced Constitutive Models for Geomaterials			<b>Contact hours</b> 2 SWS (30 h)	<b>Self-Study</b> 60 h	<b>Group Size:</b> No Restrictions
<b>Prerequisites</b> Fundamental knowledge in soil mechanics and numerical simulation in Geotechnics					
<b>Learning goals / Competences</b> Within the module CE-WP09 (Numerical Simulation in Geotechnics and Tunneling), some basic and advanced constitutive models for geomaterials are introduced. In this course, further advanced constitutive models will be introduced and their relevance for different geotechnical applications will be discussed. One main objective of this course is to study the influence of different constitutive models on the numerical results for various geotechnical applications. After successfully completing the module, the students are able to <ul style="list-style-type: none"> <li>• follow the mathematical formulation and implementation of advanced constitutive models,</li> <li>• model the material behavior of soil using suitable, complex constitutive models,</li> <li>• select suitable numerical methods and constitutive models for practical questions and assess limitations according to the selected approaches.</li> </ul>					
<b>Content</b> The course extends the existing knowledge on soil behavior and its mathematical description: <ul style="list-style-type: none"> <li>• Hardening Soil, Hardening Soil Small Strain</li> <li>• Modified Cam-Clay</li> <li>• Softsoil Creep (SSC) model</li> <li>• Hypoplasticity</li> <li>• Viscoplasticity</li> <li>• Bounding surface plasticity models SaniSand / SaniClay</li> <li>• Calibration process of advanced constitutive models</li> <li>• Effects of the constitutive model on the FE-prediction (selected examples)</li> </ul>					
<b>Teaching methods / Language</b> Lecture (1h / week), Exercises (1h / week) / English					
<b>Mode of assessment</b> Final student project with oral presentation (30 min, 100%)					
<b>Requirement for the award of credit points</b> Project work and final presentation					
<b>Module applicability</b> MSc. Computational Engineering					
<b>Weight of the mark for the final score</b> -					
<b>Module coordinator and lecturer(s)</b> Dr. A. A. Lavasan, Dr.-Ing. F. Prada, MSc. C. Schmüdderich					
<b>Further information</b>					