

| <b>Module number</b>                          | <b>Module name</b>   | <b>Module coordinator</b>                      |
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| BIW-MA-AC-E-04                                | Constitutive Modeling of Soils   | Prof. Dr. Ivo Herle<br>ivo.herle@tu-dresden.de |
| <b>Learning goals</b>                         | The students have an overview in key and fundamental topics on theory and application of the constitutive models for soils. They can perform the calibration for advanced geotechnical analyses and apply their knowledge in engineering practice. They are able to analyse and evaluate complex tasks, make their own decisions and judge their consequences. |  |
| <b>Content</b>                                | The content of the module consists of fundamental aspects of the mechanical behaviour of soils and their description using linear and non-linear elasticity, perfect plasticity, limit stress conditions, critical states, hardening elastoplasticity and Cam clay models.   |  |
| <b>Teaching and learning methods</b>          | 2 hours of lectures, 1 hour of exercise per week, self-learning  |  |
| <b>Prerequisites</b>                          | Basic knowledge of elementary soil mechanics at the level of BSc is assumed. Moreover, basic knowledge of continuum mechanics, tensor calculus and the competence obtained from the mentoring module are expected.   |  |
| <b>Applicability</b>                          | The module is one of the twelve optional modules in the Master course Advanced Computational and Civil Engineering Structural Studies, five of which should be selected.   |  |
| <b>Requirements for earning credit points</b> | The credits are awarded if the module examination is successfully passed. The module examination consists of a written examination (90 min). A collection of written assignments with a total extent of 30 working hours is a prerequisite for the examination.  |  |
| <b>Credit points and grades</b>               | Five credit points can be acquired through the module. The module grade corresponds to the grade of the written examination.   |  |
| <b>Module frequency</b>                       | The module is offered every summer semester of the academic year.  |  |
| <b>Workload</b>                               | The total workload corresponds to 120 working hours  |  |
| <b>Module duration</b>                        | The module extends for 1 semester  |  |
| <b>Recommended reading list</b>               | D. Muir Wood: Geotechnical Modeling<br>D. Muir Wood: Soil Behaviour and Critical State Soil Mechanics  |  |