



Module number	Module name	Lecturer
BIWO-04	Numerical Methods	Prof. Scherer
Content and qualification aim	<p>Contents of this module are:</p> <ul style="list-style-type: none"><li>• Construction and analysis of algorithms to solve continuous mathematical problems</li><li>• Direct methods to compute the exact solution to a problem in a finite number of steps at unlimited computer precision</li><li>• Iterative methods to compute approximations that converge to the exact solution</li><li>• Linear algebra and analytical geometry</li><li>• Solution of linear and non-linear equations, systems of equations, extremum problems, and eigenvalue problems</li><li>• Numerical integration, interpolation, and regression</li><li>• Implementation of the algorithms in software applications</li></ul> <p>After completion of the module, students will be able to apply basic as well as advanced numerical algorithms for the solution of engineering problems. Students will be able to implement these algorithms in complex software solutions.</p>	
Type of course	2 hours of lecture, 2 hours of exercise per week, and self-study	
Requirements for study	Good knowledge of differential calculus, integral calculus, and linear algebra corresponding to the level of a completed bachelor level in engineering sciences.	
Practical use of the module	The module is one of the obligatory modules in the Master's programme: Advanced Computational and Civil Engineering Structural Studies.	
Requirements for the award of credits	<p>The credits are awarded if the module examination is passed successfully.</p> <p>The module examination contains of an examination of 90 minutes.</p> <p>Prerequisite for the examination is an assignment of 30 hours.</p>	
Credits and grades	<p>4 credits can be acquired for this module.</p> <p>The grade results from the examination.</p>	
Frequency of module	The module is offered every academic year (winter semester).	
Workload	The workload is 120 working hours.	
Duration of the module	1 semester	
Recommended literature		