



<b>Number of module</b>	<b>Name of module</b>	<b>Lecturer</b>
BIWE-09	Computational Dynamics	Prof. Graf
<b>Content and qualification aim</b>	<p>Content of the module: Computer-oriented structural dynamical analysis:</p> <ul style="list-style-type: none"><li>• Single degree of freedom system in time- and frequency domain</li><li>• Multi degree of freedom system, natural vibrations, modal superposition</li><li>• Modal analysis, modal superposition</li><li>• Damping models</li><li>• Displacement method and linear dynamics</li><li>• Element formulations, transformation relations</li><li>• Substructuring and condensation techniques</li><li>• Numerical simulation in time domain, central-difference-method, Newmark-method, analysis of time integration methods</li><li>• Continuous systems</li><li>• Applications, earthquake analysis, impact problems</li></ul> <p>After having finished the module successfully students know how to solve dynamical problems of structures by applying advanced computational methods.</p>	
<b>Type of course</b>	2 hours of lectures, 1 hour of exercise per week, and self-study	
<b>Requirements for study</b>	Good knowledge from modules BIWO-02 and BIWO-03 as well as study competence from module BIWO-05	
<b>Practical use of the module</b>	The module is one of the elective modules in the Master's programme: Advanced Computational and Civil Engineering Structural Studies, of which seven have to be chosen.	
<b>Requirements for the award of credits</b>	<p>The credits are awarded if the module examination is successfully passed.</p> <p>The module examination consists of a written examination (120 min).</p>	
<b>Credits and grades</b>	<p>4 credits can be acquired for this module.</p> <p>The grade is the grade of the written examination.</p>	
<b>Frequency of module</b>	The module is offered every academic year (summer semester).	
<b>Workload</b>	The workload is 120 working hours.	
<b>Duration of the module</b>	1 semester	
<b>Recommended Literature</b>	<p>Clough, Penzien: Dynamics of Structures, McGraw-Hill</p> <p>Argyris, Mlejnek: Dynamics of Structures, North-Holland</p> <p>Meskouris: Structural Dynamics, Ernst &amp; Sohn</p>	