

Applied Computational Simulations of Structures					
Module-No./Abbreviation	Credits	Workload	Term	Frequency	Duration
CE-WP11/ACSoS	6 CP	180 h	2 nd Sem.	Summer term	1 Semester
Courses a) Applied Finite Element Methods b) Finite Element Methods in Linear Computational Dynamics			Contact hours a) 2 SWS (30 h) b) 2 SWS (30 h)	Self-Study a) 60 h b) 60 h	Group Size: No Restrictions
Prerequisites Finite Element Methods in Linear Structural Mechanics (CE-P05), Recommended: Adaptronics (CE-WP03)					
Learning goals / Competences After successfully completing the module, the students <ul style="list-style-type: none"> • have the ability to model structures using commercial finite element software and to verify and assess the simulation results, • can generate simulation models for structures with static and dynamic loading and write reports, • can handle digital interfaces between BIM and structural analysis software to convert CAD models into structural simulation models, • can perform transient and dynamic analyses of materials and structures. 					
Content a) <i>Applied Finite Element Methods</i> The course deals with the application of finite element simulations in structural engineering. This includes: <ul style="list-style-type: none"> • handling of commercial finite element software • modeling methods and sources of modeling errors • pre- and post-processing • BIM-FE interfaces b) <i>Finite Element Methods in Linear Computational Dynamics</i> The following topics are part of the lectures and exercises: <ul style="list-style-type: none"> • Basics of linear Elastodynamics and Finite Element Methods in Structural Dynamics • Explicit and implicit integration methods with emphasis on generalized Newmark-methods • Computer lab: Implementation of algorithms into Finite Element programs 					
Teaching methods / Language a) Seminar (2 SWS) / English b) Exercises (1 SWS), Lectures (1 SWS) / English					
Mode of assessment Homework: Applied computational simulations of structures with static and dynamic loadings (60 hours, 100%), homework partially with presentations (60 hours, deadlines will be announced at the beginning of the semester)					
Requirement for the award of credit points Passed homework					
Module applicability MSc. Computational Engineering, MSc. Bauingenieurwesen					
Weight of the mark for the final score 6 %					

Module coordinator and lecturer(s)

Prof. Dr. Roger A. Sauer, Assistants

Further information
