Data:	NADE. MA. Nr. 3214 / Examination number: 11109	Version: 10.05.2021	Start Year: SoSe 2012
Module Name:	**Numerical Analysis of Differential Equations**		
(English):			
Responsible:	Aland, Sebastian / Prof. Dr.		
Lecturer(s):	Rheinbach, Oliver / Prof. Dr. Aland, Sebastian / Prof. Dr.		
Institute(s):	Institute of Numerical Mathematics and Optimization		
Duration:	1 Semester(s)		
Competencies:	Students shall understand fundamental concepts of numerical analysis of ordinary and partial differential equations, such as discretization, consistency, stability, and convergence. They can apply discretization methods to compute the numerical solution of a given differential equation. They can compare various methods and evaluate their efficiency for a given problem. The students know relevant terms in English.		
Contents:	ODEs: Euler methods, Runge Rutta Methods, Linear Multistep Methods, Stability, Stiffness; PDEs: Finite Difference techniques, time stepping, von Neumann stability analysis. International literature and relevant terms in English are explained.		
Literature:	Finite Difference Methods for Ordinary and Partial Differential Equations von Randy Leveque, University of Washington		
Types of Teaching:	S1 (SS): Lectures (2 SWS) S1 (SS): Exercises (1 SWS)		
Pre-requisites:	**Recommendations:** Solid knowledge in computer programming. Advanced mathematics course for scientists and engineers. Some familiarity with the theory or applications of differential equations is helpful		
Frequency:	yearly in the summer semester		
Requirements for Credit Points:	For the award of credit points it is necessary to pass the module exam. The module exam contains: KA [120 min]		
Credit Points:	3		
Grade:	The Grade is generated from the examination result(s) with the following weights (w): KA [w: 1]		
Workload:	The workload is 90h. It is the result of 45h attendance and 45h self-studies.		