Module MA-INF 2302	**Physics-based Modelling**				
Workload 180 h	**Credit points** 6 CP	**Duration** 1 semester	**Frequency** at least every 2 years		
Module coordinator	Prof. Dr. Andreas Weber				
Lecturer(s)	Prof. Dr. Andreas Weber				
Classification	**Programme** M. Sc. Computer Science	**Mode** Optional	**Semester** 3.		
Technical skills	Students learn the fundamental techniques of physics-based modelling for computer graphics and computer animation. The students shall be able to choose appropriate mathematical models. Knowing the algorithmic techniques and algorithmic issues, they shall be able to come up with software solutions for specific problems.				
Soft skills	Social competences (work in groups), communicative skills (written and oral presentation)				
Contents	Initial value problems; particle simulation; rigid body simulation; multi-body-systems; collision detection; collisions response; cloth modelling; hair modelling; physics-based motion synthesis				
Prerequisites	**Recommended:** all of the following: MA-INF 2111 – Foundations of Graphics – ???				
Format	**Teaching format**	**Group size**	**h/week**	**Workload[h]**	**CP**
	Lecture	60	2	30 T / 45 S	2.5
	Exercises	30	2	30 T / 75 S	3.5
	T = face-to-face teaching; S = independent study				
Exam achievements	Oral exam (graded)				
Study achievements	Successful exercise participation (not graded)				
Forms of media					
Literature	• Dietmar Jackel, Stephan Neunreither, Friedrich Wagner: Methoden der Computeranimation, Springer 2006 • David M. Bourg: Physics for Game Developers, O'Reilly • Advanced course notes on physics-based modelling				