Module MA-INF 2305	**Geometry Processing II**				
Workload 180 h	**Credit points** 6 CP	**Duration** 1 semester	**Frequency** every year		
Module coordinator	Prof. Dr. Reinhard Klein				
Lecturer(s)	Prof. Dr. Reinhard Klein				
Classification	**Programme** M. Sc. Computer Science	**Mode** Optional	**Semester** 3.		
Technical skills	Analytical formulation of problems related to geometry processing, shape analysis and shape retrieval as well as knowledge of advanced algorithms and techniques from these fields. Self-dependent implementation of the algorithms.				
Soft skills	Analytical problem description, creativity, self-dependent solution of practical problems in the area of image based rendering and digital photography, presentation of solution strategies and implementations, self-dependent literature research, collaboration abilities, self-management				
Contents	This class is focussed on advanced topics in the field of geometry processing. Students will get familiar with recent developments in the area of shape analysis and shape retrieval. Topics among others will be • Parameterization of surfaces • Shape segmentation and shape similarity • Shape classification and content based retrieval • Shape spaces and statistical shape analysis				
Prerequisites	**Recommended:** Algorithms and data structures, basic knowledge on multidimensional analysis und linear algebra, basic knowledge in stochastic and statistics, numerical analysis and numerical linear algebra, C++				
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	• T. Funkhouser, M. Kazhdan, Shape-Based Retrieval and Analysis of 3D-Models, Siggraph Course Notes, 2004 • L. Dryden, K.V. Mardia, Statistical Shape Analysis, John Wiley & Sons, 1998 • H. Krim, Jr, A. Yezzi (editors): Statistics and Analysis of Shapes (Modeling an Simulation in Science, Engineering and Technology), Birkhäuser Boston, 2006				