Module MA-INF 2306	**Virtual Reality**		
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	Basic knowledge of hard- and software components of current VR-Systems, Broad knowledge of tracking-, collision detection- and real-time rendering algorithms, knowledge of methods to integrate haptic and sound, knowledge of GPU programming with emphasis on special effect generation, ability to implement components of a VR-System		
Soft skills	Analytical problem description, creativity, self-dependent solution of practical problems in the area of Virtual Reality, presentation of solution strategies and implementations, self-dependent literature research, collaboration abilities, self-management		
Contents	Scene Graphs, Stereo Seeing (HW, SW), Tracking (HW, SW), Acceleration Techniques (LOD; Culling), Collision detection, Haptics, Sound, Special effects (GPU-Programming)		
Prerequisites	**Recommended:** Mathematical background (multidimensional analysis and linear algebra, foundations of numerical methods), good knowledge of the foundations of computer 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

- K. Stanney (ed.): Handbook of Virtual Environments. Lawrence Erlbaum Associates, 2002
- W. Sherman, A. Craig: Understanding Virtual Reality. Morgan Kaufman, 2002
- D. Pape: Commodity-Based Projection VR, Siggraph Course Notes, 2006
- N. Tatarchuk (organizer): Advanced Real-Time Rendering in ğD Graphics and Games, Siggraph Course Notes, 2006