

Module MA-INF 4215	Humanoid Robotics				
Workload 180 h	Credit points 6 CP	Duration 1 semester	Frequency every year		
Module coordinator	Prof. Dr. Maren Bennewitz				
Lecturer(s)	Prof. Dr. Maren Bennewitz				
Classification	Programme M. Sc. Computer Science		Mode Optional	Semester 2.	
Technical skills	This lecture covers techniques for humanoid robots such as perception, navigation, motion planning, grasping, and human motion analysis.				
Soft skills	Communicative skills (oral and written presentation of solutions, discussions in small teams), ability to analyze problems.				
Contents	Self-calibration with least squares, 3D environment representation, self-localization with particle filters and improved proposals, footstep planning, whole-body motion planning with rapidly exploring random trees, grasping, active perception, human motion analysis, activity recognition, statistical testing, paper writing.				
Prerequisites	Recommended: MA-INF 4113 – Cognitive Robotics				
Format	Teaching format		Group size	h/week	Workload[h]
	Lecture		60	2	30 T / 45 S
	Exercises		30	2	30 T / 75 S
	T = face-to-face teaching; S = independent study				
Exam achievements	Oral exam (graded)				
Study achievements	Successful exercise participation (not graded)				
Forms of media					
Literature	<ul style="list-style-type: none">• S. Thrun, W. Burgard and D. Fox: Probabilistic Robotics. MIT Press, 2005.• B. Siciliano, O. Khatib (Eds.): Springer Handbook of Robotics• K. Harada, E. Yoshida, K. Yokoi (Eds.), Motion Planning for Humanoid Robots, Springer• Selected research papers.				