

Module MA-INF 4203	Autonomous Mobile Systems				
Workload 180 h	Credit points 6 CP	Duration 1 semester	Frequency every year		
Module coordinator	Prof. Dr. Sven Behnke				
Lecturer(s)	Dr. Dirk Schulz, Prof. Dr. Sven Behnke				
Classification	Programme M. Sc. Computer Science		Mode Optional	Semester 2.	
Technical skills	Profound knowledge of development and test regarding structure and function of learning, autonomous, mobile systems; Knowledge of the computational, mathematical, and technical requirements for the design of autonomous systems for specific applications and for specific functional environments				
Soft skills	The students will be capable to assess applications for autonomous mobile systems. They will be capable to identify what part of the applications might be improved by using state of the art developments. The student will learn how to plan and implement a software project in small working groups.				
Contents	Requirements for the implementation of autonomous mobile systems, e.g. for: map making, dead reckoning, localisation, SLAM-methods, various principles of robot path planning; methods for action planning. Comparison of different learning paradigms for specific applications.				
Prerequisites	Recommended: all of the following: MA-INF 4101 – Theory of Sensorimotor Systems MA-INF 4113 – Cognitive Robotics				
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	<ul style="list-style-type: none"><li>• J. Buchli: Mobile Robots: Moving Intelligence, Published by Advanced Robotic Systems and Pro Literatur Verlag</li><li>• Sebastian Thrun, Wolfram Burgard, Dieter Fox: Probabilistic Robotics, MIT Press, 2005</li><li>• Howie Choset et al.: Principles of Robot Motion, MIT-Press, 2005</li></ul>				