Mobile Robots						AR-225
Rota	Rota Duration		Semester	SWS	Credit Points	Workload
annua	ally SS 1 Semester		2 nd (Semester)	4 SWS	5	150 h
1	Modul Structure					
	Course (Abbreviation)		Type/ SWS	Presence	Self Study	Credit Points
	a) Mobile Robots (MR)		Lecture/ 2 SWS	30 h	30 h	3
	b) Mobile Robots (MR)		Tutorial/ 2 SWS	30 h	60 h	2
2	Language English					
3	Content					
	1. Robot Operating System (ROS)					
	2. Robotics System Toolbox Matlab					
	3. Sensors, actuators and kinematics of mobile robots					
	4. Homing and trajectory following					
	5. Obstacle avoidance (Vector Field Histograms)					
	6. Localisation					
	7. Path planning (Rapidly Exploring Random Trees, Probabilistic Roadmap)					
	8. Navigation (Pure Pursuit, KUS Navigation Stack)					
	9. Unline trajectory optimization					
	TO. Mapping and Stan					
	Literature:					
	Siciliano, Khatih: Springer Handbook of Robotics					
	 selected papers on mobile robotics from journals and conferences 					
4	Competencies					
-	The students acquire a profound knowledge of fundamental concepts and practical experience on					
	mobile robots. Students are able to solve mobile robotic tasks such as obstacle avoidance, navigation					
	and localization in a self-dependent manner with selected methods and algorithms in ROS/Matlab.					
5	Examination Requirements					
	- successful completion of 75% programming assignments (prerequisite for eligibility to the written					
	exam					
	- written exam					
6	Formality of Examination					
	Image: Module Finals Image: Accumulated Grade					
7	Module Requirements (Prerequisites)					
8	Allocation to Curriculum:					
	Program: Automation & Robotics, Field of study: Robotics, Cognitive Systems					
9	Responsibility/ Lecturer					
	apl. Prof. Dr. F. Hoffmann/ apl. Prof. Dr. F. Hoffmann					