Module title	Abbreviation
Autonomous Mobile Systems	10-LURI=AMS-232-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science XVII	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)	
10	numerical grade	--	

Duration	Module level	Other prerequisites	
1 semester	graduate	--	

Contents

(1) What are mobile robots? (2) Sensors (3) Sensor data processing (4) Locomotion and kinematics (5) Localization (6) Localization in maps (7) Mapping and SLAM (8) Navigation (9) Sensor data interpretation (10) Robot control architectures

Intended learning outcomes

Students know Bayesian concepts for sensor data processing for a mobile system and are able to apply the concepts to mobile robots. Derived concepts like Kalman filter, Particle filter, POMDPs, etc. are understood. They have learned the steps to build and program mobile systems.

Courses (type, number of weekly contact hours, language — if other than German)

V (4) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
Creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits):
IT, KI, ES, LR, GE

Workload

300 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Computational Mathematics (2024)
Master's degree (1 major) Mathematics (2024)