

## Module Handbook

TUK MODHB Homepage

# Module INF-61-52-M-6

Autonomous Mobile Robots for CVT and Students of other Faculties (M, 8.0 LP)

## Module Identification

Module Number	Module Name	CP (Effort)
INF-61-52-M-6	<i>Autonomous Mobile Robots for CVT and Students of other Faculties</i>	8.0 CP (240 h)

## Basedata

CP, Effort	8.0 CP = 240 h
Position of the semester	1 Sem. in SuSe
Level	[6] Master (General)
Language	[EN] English
Module Manager	Berns, Karsten, Prof. Dr. (PROF   DEPT: INF)
Lecturers	
Area of study	[INF-ES] Embedded Systems and Robotics
Reference course of study	[GS-88.844-SG] M.Sc. Commercial Vehicle Technology
Lifecycle-State	[NORM] Active

### Notice

Same lecture as for module INF-61-33-V-6 but with specific exercise and written exam.

## Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
4V+2U	INF-61-52-K-6	P	U-Schein	PL1	8.0	SuSe

- About [INF-61-52-K-6]: Title: "Autonomous Mobile Robots for CVT and Students of other Faculties"; Presence-Time: 84 h; Self-

Study: 156 h

- About [INF-61-52-K-6]: The study achievement "[U-Schein] proof of successful participation in the exercise classes (ungraded)" must be obtained.
  - It is a prerequisite for the examination for PL1.

## Examination achievement PL1

- Form of examination: **written exam (Klausur) (60-180 Min.)**
- Examination Frequency: each summer semester
- Examination number: 66152 ("Autonomic Mobile Robots I, II")

## Evaluation of grades

The grade of the module examination is also the module grade.

### Contents

From [INF-61-52-K-6] Autonomous Mobile Robots for CVT and Students of other Faculties:

The following contents will be mediated in the lecture:

- AMR system components
- Kinematics and dynamics of wheel-driven robots
- Collision avoidance
- Navigation
- SLAM (Simultaneous Localisation and Mapping)
- Algorithms for the estimation of positions
- Vision in mobile robotics

### Competencies / intended learning achievements

Students have skills to:

- Kinematics and dynamics of autonomous mobile robots.
- Lokalisation and mapping.
- Concepts for the development of complex control systems.
- In-depth knowledge in the field of autonomous mobile robots.

### Literature

From [INF-61-52-K-6] Autonomous Mobile Robots for CVT and Students of other Faculties:

- R- Siegwart and I.R. Nourbakhsh (2004). Introduction to Autonomous Mobile Robots. The MIT Press.
- S. Iyengar and A. Elfes (1991). Autonomous Mobile Robots - Perception, Mapping and Navigation, volume 1. Institute of Electrical and Electronic Engineers.
- Jones, J. L. (1993). Mobile Robots — From Inspiration to Implementation. Addison Wesley.
- Concrete literature will be announced in the lecture.

### Requirements for attendance of the module (informal)

None

### Requirements for attendance of the module (formal)

None

### References to Module / Module Number [INF-61-52-M-6]

**Module-Pool****Name**

[GS-CVT-CS-2022-E-MPOOL-6]

Catalog Electives Computer Science 2022

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