

# Course Manual AMS

Special Aspects of Mobile Autonomous Systems

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## – General information

<b>Long name</b>	Special Aspects of Mobile Autonomous Systems
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<b>Approving CModule</b>	<a href="#">AMS_MaTIN</a>
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<b>Responsible</b>	Prof. Dr. Chunrong Yuan <small>Professor Fakultät IME</small>
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<b>Valid from</b>	winter semester 2020/21
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<b>Level</b>	Master
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<b>Semester in the year</b>	winter semester
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<b>Duration</b>	Semester
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<b>Hours in self-study</b>	96
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<b>ECTS</b>	5
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<b>Professors</b>	Prof. Dr. Chunrong Yuan <small>Professor Fakultät IME</small>
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<b>Requirements</b>	Capability of software and project development Knowledge of signal processing and mathematics
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<b>Language</b>	English
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<b>Separate final exam</b>	Yes
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### Literature

Siegwart et.al.: Introduction to autonomous mobile robots, MIT Press, 2010

### Final exam

<b>Details</b>	Oral exam
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<b>Minimum standard</b>	At least 50% with correct answers
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<b>Exam Type</b>	EN mündliche Prüfung, strukturierte Befragung
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## – Lecture / Exercises

### Learning goals

<b>Goal type</b>	<b>Description</b>
Knowledge	Mobile autonomous systems Cognitive and behaviour-based robotics Environmental modelling and spatial cognition Interaction and navigation

### Special requirements

none

### Accompanying material

Lecture slides

### Separate exam

No

### Expenditure classroom teaching

<b>Type</b>	<b>Attendance (h/Wk.)</b>
Lecture	2
Tutorial (voluntary)	0

## – Lecture / Exercises

### Learning goals

Goal type	Description
Skills	<p>Teamwork: Development of autonomous systems with cognitive capabilities and intelligent behaviours.</p> <p>Such cognitive capabilities include e.g.: Recognize objects with sensors, estimate their locations or movements, make 3D representations and interpretations or build a map of the environment etc.</p> <p>Intelligent behaviours can be demonstrated among others by such actions: Move and navigate autonomously without collision in unknown environments, fetch or transport objects for a special application, nature interactions and collaborations among human and robots.</p>

### Expenditure classroom teaching

Type	Attendance (h/Wk.)
Project	1
Tutorial (voluntary)	0

### Special requirements

none

<b>Accompanying material</b>	HW for system development (e.g. sensors, actors, robot systems) SW for system development (e.g. ROS, OpenCV, simulation software)
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<b>Separate exam</b>	Yes
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### Separate exam

<b>Exam Type</b>	EN Projektaufgabe im Team bearbeiten (z.B. im Praktikum)
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<b>Details</b>	Evaluation of the achieved results based on presentations, live demonstrations, discussions as well as documentations in form of texts, source codes, graphic illustrations and video clips
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<b>Minimum standard</b>	Presentation of a feasible project idea on the kick-off day and on-schedule delivery, presentation and demonstration of a working system.
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