03-IMVP-SPRS	Semantische 3D-Perzeption für robotische Systeme
	Semantic 3D Perception for Robotic Systems

Lehrform *(teaching format)* / **SWS** *(hours per week)*: 4K

Kreditpunkte *(credit points)*: 6

Turnus *(frequency)*: usually each summer term

Inhaltliche Voraussetzungen *(content-related prior knowledge/skills)*: Good background in Calculus, Probability and Logic is of great importance

Sprache *(language)*: English

Lehrende *(teaching staff)*: AG Künstliche Intelligenz (Prof. Dr. Michael Suppa, u.a.)

Studiengang *(degree program)*	Module	Semester
Infornatik (Master)	IMVP, IMVP-AI, IMVP-VMC	ab 1.Sem.
AI and Intelligent Systems (Master)	AI-M-CER	from 2nd sem.
Infornatik (Bachelor)	(nur *Freie Wahl*)	

Lernergebnisse / *Learning Outcome*:

- Be able to collect of data about the world through sensors
- Understand and apply methods of robot localization and environment mapping
- Detect, segment, recognize and localize of objects for robotic agents
- Understand how to leverage background knowledge for self-adaptive perception pipelines
- Gain a basic understanding of future trends in robot perception
- Validating perception’s outputs
- Overcoming sensors in complex worlds
- Narrating about what is going on

Inhalte / *Contents*:

- Sensing and Sensor Technologies (Collection of data about the world through sensors)
- Robot State Estimation (Robot localization and environment mapping)
- (Pervasive) Object Perception for Robotic Agents (Detection, segmentation, recognition and localization of objects for robotic agents)
- Task-adaptable Robot Perception (Leveraging background knowledge for self-adaptive perception pipelines)
- Future Trends in Robot Perception (Introduction to future trends in robot perception)
- Imagination-Enabled Robot Perception (Validating perception’s outputs)
- Robot Perception trough Cognitive Emulation (Overcoming sensors in complex worlds)
- Deep Activity Observation (Narrating about what is going on)

Hinweise *(remarks)*: The table lists only the primary / most specific modules to which this course is assigned.