**Lehrform (teaching format) / SWS (hours per week):** 2VL + 2UE

**Kreditpunkte (credit points):** 6

**Turnus (frequency):** every 2 years

**Inhaltliche Voraussetzungen (content-related prior knowledge/skills):** Foundations in Robotics and AI

**Sprache (language):** English

**Lehrende (teaching staff):** AG Software Engineering für Kognitive Robotik und Systeme (Prof. Dr. Nico Hochgeschwender)

<table>
<thead>
<tr>
<th>Studiengang (degree program)</th>
<th>Module</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informatik (Master)</td>
<td>IMVP, IMVP-AI</td>
<td>ab 1.Sem.</td>
</tr>
<tr>
<td>AI and Intelligent Systems (Master)</td>
<td>AI-M-CER</td>
<td>from 2nd sem.</td>
</tr>
<tr>
<td>Informatik (Bachelor)</td>
<td>(nur Freie Wahl)</td>
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</tbody>
</table>

**Lernergebnisse / Learning Outcome:**

- To be able to communicate in the terminology of the field of trustworthy cognitive robots and systems and to classify methods, concepts, components and tools using this terminology.
- To be able to assess the trustworthiness of cognitive robots and systems
- To be able to identify key ethical concerns associated with cognitive robots and systems
- To be able to select and apply measures that could be adopted to mitigate concerns related to trustworthiness

**Inhalte / Contents:**

- Engineering ethics and common ethical principles and debates (e.g., descriptive vs. prescriptive ethics)
- Methods for performing risk assessment (e.g., STPA, hazard analysis)
- Case studies of transparency, trustworthiness, predictability and explainability
- Methods and techniques for making learning-enabled data-driven components more robust and dependable (e.g., out-of-distribution detection, runtime monitoring)
- Relevant standards and norms (e.g., IEEE P7000 series) for trustworthy systems
- Trustworthiness in the context of human-robot collaboration (e.g., safety standards ISO 15066, responsible design, human-awareness)
- Value-based engineering

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