

Simulation in Robotics					AR-218
Rota	Duration	Semester	SWS	Credit Points	Workload
annually SS	1 Semester	2nd (Semester)	2 SWS	5	150 h
<b>1</b>	<b>Modul structure</b>				
	<b>Course (Abbreviation)</b>	<b>Type/ SWS</b>	<b>Presence</b>	<b>Self study</b>	<b>Credits</b>
	a) Simulation in Robotics (SimRob)	Lecture/ 2 SWS (compact course)	30 h	60 h	3
	b) Simulation in Robotics (SimRob)	Tutorial/ 1 SWS (compact course)	15 h	45 h	2
<b>2</b>	<b>Language</b> English				
<b>3</b>	<b>Content</b> <ol style="list-style-type: none"> <li>1. Introduction and examples of 3D robot workcell simulation and requirements for simulation systems;</li> <li>2. Introduction of CAD, CAD data exchange, basic 3D shape modeling technology;</li> <li>3. Programming the simulation model: Simulation language and native robot programming language;</li> <li>4. Simulation principles, accuracies and computational requirements;</li> <li>5. Realistic Robot Simulation (RRS);</li> <li>6. Overview of different industrial robot simulation systems;</li> <li>7. Tutorial and Practice: Working with a simulation system</li> </ol> <b>Literature:</b> <ul style="list-style-type: none"> <li>• Robotics: <ul style="list-style-type: none"> <li>○ Paul: "Robot Manipulators", " Craig: "Introduction to Robotics"</li> </ul> </li> <li>• CAD: <ul style="list-style-type: none"> <li>○ Lee: "Principles of CAD/CAM/CAE Systems"</li> </ul> </li> <li>• Simulation: <ul style="list-style-type: none"> <li>○ Bossel: "Modeling and Simulation"</li> </ul> </li> </ul>				
<b>4</b>	<b>Goals</b> The aim of this course is to bring students into contact with robot workcell simulation and robot offline programming and to give a practical impression of using workcell simulation systems. Having attended the course brings the qualification to decide about advantages and working steps of applying robot offline programming.				
<b>5</b>	<b>Examination Requirements</b> The final exam will be an oral (30 minutes) or written (2 hours) exam, depending on the number of participants (form will be announced second week of course).				
<b>6</b>	<b>Formality of Examination</b> <input checked="" type="checkbox"/> Module Finals <span style="float: right;"><input type="checkbox"/> Accumulated Grade</span>				
<b>7</b>	<b>Module Requirements (Prerequisites)</b>				
<b>8</b>	<b>Allocation to Curriculum:</b> Program: Automation & Robotics, Field of study: <b>Robotics</b>				
<b>9</b>	<b>Responsibility/ Lecturer</b> Prof. Dr. B. Kuhlenkötter/Prof. Dr. B. Kuhlenkötter				