

<i>Course title</i>	<i>Practical SAT Solving and Automated Planning</i>
<i>Course code</i>	<i>IW 933</i>
<i>Module coordinator</i>	<i>Miriam Heinrich</i>
<i>Lecturer</i>	<i>Dr. Tomas Balyo</i>
<i>Level of course</i>	<i>Bachelor</i>
<i>Recommended prerequisites</i>	
<i>Type of course</i>	<i>Lecture</i>
<i>Weekly lecture hours (SWS)</i>	<i>2</i>
<i>ECTS credits</i>	<i>2</i>
<i>Workload</i>	<i>In total 60 h, 30h course attendance, 30 h self-study</i>
<i>Assessment (grading; pass/fail)</i>	<i>graded</i>
<i>Regular cycle</i>	<i>Each semester</i>
<i>Language of instruction</i>	<i>English</i>
<i>Contents:</i>	<p>The course offers an introduction to the methods and techniques used in Boolean Satisfiability (SAT) solving and Automated Planning. The students will learn how to use SAT solvers and automated planners and also how they work. The topics covered in the lecture include:</p> <ul style="list-style-type: none"> <li>• Practical applications of SAT solving</li> <li>• The DPLL/CDCL algorithm and how they are implemented</li> <li>• Local search SAT solving algorithms</li> <li>• Encoding problems as SAT problems and selecting the proper SAT solver</li> <li>• Applications of automated planning</li> <li>• Formalization of planning problems and the PDDL language</li> <li>• Basic state space search algorithms (forwards/backwards search)</li> <li>• Heuristic search algorithms and planning heuristics</li> <li>• Satisfiability based planning</li> <li>• Hierarchical task network planning</li> <li>• classical scheduling approaches</li> <li>• constraint-based scheduling</li> <li>• planning for virtual agents in computer games</li> </ul>
<i>Learning outcome (competencies):</i>	<p><i>After having successfully completed the course, the students will</i></p> <ul style="list-style-type: none"> <li>• be able to model various problems as SAT or as planning tasks in the PDDL language and solve them using off-the-shelf solvers.</li> <li>• understand the approaches used in SAT solving and automated planning algorithms, which will allow them to efficiently model and solve real world problems by selecting the proper tools for the given task.</li> </ul>
<i>Teaching methods</i>	<p><input checked="" type="checkbox"/>Lecture      <input type="checkbox"/>Group work  <input type="checkbox"/>Exercises      <input type="checkbox"/>Simulation  <input type="checkbox"/>Video feedback   <input type="checkbox"/>Others: <i>Klicken oder tippen Sie hier, um Text einzugeben.</i></p>

<i>Assessment methods</i>	<i>Assignment</i>
<i>Recommended reading</i>	
<i>Additional information</i>	
<i>Recognition of credits</i>	