

Module title		Abbreviation
Deep Reinforcement Learning for Optimal Control		10-I=DRLOC-252-m01
Module coordinator		Module offered by
Dean of Studies Informatik (Computer Science)		Institute of Computer Science
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
<ul style="list-style-type: none"> • Key Concepts in Reinforcement Learning • Exact Methods for Finite Markov Decision Processes • Tabular Reinforcement Learning • Planning and Learning with Tabular Methods • Approximation Methods and Deep Reinforcement Learning • Policy Optimization • Value-Based Methods • Applying Reinforcement Learning and Practical Tips and Tricks • Aerospace Applications • Model-Based Reinforcement Learning • Challenges • Frontiers and Future of Deep Reinforcement Learning 		
Intended learning outcomes		
Students understand the basics of reinforcement learning & deep reinforcement learning (model-free & model-based). They understand current challenges and unsolved problems. They are able to use standard algorithms for (continuous) control tasks and have learned about aerospace applications.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2) + Ü (2) Module taught in: English		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 60 to 120 minutes) If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). Language of assessment: English creditable for bonus		
Allocation of places		
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Additional information		
Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): IN		
Workload		
150 h		
Teaching cycle		
Teaching cycle: every year, summer semester		
Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		

Master's degree (1 major) Computer Science (2025)