Scheduling Problems and Solutions					AR-202
Rota bi-annually SS	**Duration** 1 Semester	**Semester** 2nd (Semester)	**SWS** 7 SWS	**Credit Points** 10	**Workload** 300 h

1	**Modul Structure**				
	Course (Abbreviation)	**Type/ SWS**	**Presence**	**Self Study**	**Credit Points**
	a) Scheduling Problems and Solutions (SPaS)	Lecture/ 4 SWS	45h	135 h	6
	b) Scheduling Problems and Solutions (SPaS)	Tutorial/ 2 SWS	25 h	95 h	4
	c) Scheduling Problems and Solutions (SPaS)	Lab/ 1 SWS	15 h		
2	**Language** English				
3	**Content** 1. Single Machine Models: Classification, complexity, total weighted completion time, maximum lateness and multiple objectives 2. Parallel Machine Models: Makespan, total completion time, preemption 3. Shop Systems: Flow shop, flexible flow shop, job shop, open shop 4. Online Scheduling: Competitive factors, non clairvoyant scheduling 5. Scheduling in Practice: Computer intelligence, Integer linear programming **Literature:** • M. Pinedo: Scheduling - Theory, Algorithms and Systems, 4th edition, Springer 2012 • Yves Robert, Frédéric Vivien (ed.): Introduction to Scheduling, CRC Press, 2010				
4	**Competencies** The students know the classification of scheduling problems as well as the application of practical algorithms, heuristics, and methods in order to solve these combinatorial resource allocation tasks. They can evaluate the efficiency of classical solution methods and will be able to develop new solution approaches for complex scheduling problems based on their acquired knowledge.				
5	**Examination Requirements** Dependent on the number of participants the final exam is takes place as oral (40 min) or written exam (2h). The students must successfully participate in the lab course as preparation for the exam.				
6	**Formality of Examination** ☒ Module Finals ☐ Accumulated Grade				
7	**Module Requirements (Prerequisites)**				
8	**Allocation to Curriculum:** Program: Automation & Robotics, Field of study: Robotics, Cognitive Systems				
9	**Responsibility/ Lecturer** *Prof. Dr. Uwe Schwiegelshohn/* Prof. Dr. Uwe Schwiegelshohn				