

Module Name: Real-Time Systems (Elective)					
Module Number		Level	Master	Short Name	
Module Responsibility / Lecturer	Assoc. Prof. Dr. Søren Top				
Department, Facility	SDU, Department of Mechanical and Electrical Engineering				
Course of Studies	Medical Microtechnology, Master				
Compulsory/elective	Elective	ECTS Credit Points		5	
Semester of Studies	2	Semester Hours per Week		4	
Length (semesters)	1	Workload (hours)		150	
Frequency	SuSe	Presence Hours		48	
Teaching Language	English	Self-Study Hours		102	
Consideration of Gender and Diversity Issues	<input checked="" type="checkbox"/> Use of gender-neutral language (THL standard)				
	<input type="checkbox"/> Target group specific adjustment of didactic methods				
	<input type="checkbox"/> Making subject diversity visible (female researchers, cultures etc.)				
Applicability	None				
Remarks	None				
Course 1: Real-Time Systems					
Course Number		Short Name			
Course Type	Lecture exercises	and	Form of Learning	Presence	
Mandatory Attendance	<input checked="" type="checkbox"/>	ECTS Credit Points		5	
Participation Limit	None	Semester Hours per Week		4	
Group Size (practical training, exercises, ...)	n. a.	Workload (hours)		150	
Teaching Language	English	Presence Hours		48	

Study Achievements („Studienleistung“, SL)	None	Self-Study Hours	102
SL Length (minutes)	n. a.	SL Grading System	n. a.
Exam Type	Oral exam	Exam Language	English
Exam Length (minutes)	20	Exam Grading System	7-point grading scale
Learning Outcomes	<p>Knowledge</p> <ul style="list-style-type: none"> • Knowledge about modern tools for producing schedules for real-time systems. • Insight in the workings of major scheduling algorithms • Knowledge about adapting scheduling techniques under different circumstances • Knowledge of the state of the art of appliance of scheduling techniques in present real-time systems. <p>Skills</p> <ul style="list-style-type: none"> • The skill to analyze the real-time aspects of embedded systems. • The skill to choose an appropriate scheduling technique for a real-time system • The ability to identify, calculate and verify schedules of concurrent real-time systems. • The skill to estimate the maximum response times to critical events in embedded systems. <p>Competences</p> <ul style="list-style-type: none"> • The competence to handle real-time aspects of embedded systems. • The competence to design time schedules that ensure that tasks in embedded systems with hard deadlines keep them. • The competence to estimate response-times in real-time systems. 		
Participation Prerequisites	Familiarity with real-time operating systems and the C programming language.		
Contents	<ul style="list-style-type: none"> • Scheduling of independent and dependent tasks • Scheduling schemes for handling overload • Multiprocessor scheduling • Joint scheduling of tasks and messages in distributed systems • Examples of different real-time operating systems, real-time languages and real-time middle-ware systems. 		
Literature	Will be provided during the lectures.		
Remarks	None		