TECHNISCHE HOCHSCHULE LÜBECK

Module: Control System Basics

Level	Bachelor	**Short Name**	CS I
Responsible Lecturers	Bayerlein, Jörg, Prof. Dr.		
Department, Facility	Electrical Engineering and Computer Science		
Course of Studies	Electrical Engineering - Communication Systems, Bachelor		
Compulsory/elective	Compulsory	**ECTS Credit Points**	5
Semester of Studies	5	**Semester Hours per Week**	4
Length (semesters)	1	**Workload (hours)**	150
Frequency	WiSe	**Presence Hours**	57
Teaching Language	English	**Self-Study Hours**	93

The following section is filled only if there is **exactly one** module-concluding exam.

Exam Type	Written Exam	**Exam Language**	English
Exam Length (minutes)	120	**Exam Grading System**	Pass
Learning Outcomes	The students should learn to describe systems via signal block diagrams and reduce them. They should be able to analyze dynamical system behaviour using Bode plots and complex transfer functions. Standard blocks should be used to design simple loops with 1 or 2 PT1- processes. With the FRA (frequency response approach) – design the students learn to design and optimize general single and multiloop-systems using PIDT1- controller.		
Participation Prerequisites	Knowledge of lectures in 1. – 3. semester		

The previous section is filled only if there is **exactly one** module-concluding exam.

Consideration of Gender and Diversity Issues	✘ Use of gender-neutral language (THL standard) ✘ Target group specific adjustment of didactic methods ✘ Making subject diversity visible (female researchers, cultures etc.)
Applicability	
Remarks	

05.03.2020

Module Course: Control System Basics (Lecture)

(of Module: Control System Basics)

Course Type	Lecture	**Form of Learning**	Presence
Mandatory Attendance	yes	**ECTS Credit Points**	4
Participation Limit		**Semester Hours per Week**	3
Group Size	60	**Workload (hours)**	120
Teaching Language	English	**Presence Hours**	45
Study Achievements ("Studienleistung", SL)		**Self-Study Hours**	75
SL Length (minutes)		**SL Grading System**	

The following section is filled only if there is a course-specific exam.

Exam Type	Written Exam	**Exam Language**	English
Exam Length (minutes)	120	**Exam Grading System**	Pass
Learning Outcomes	See above		
Participation Prerequisites	Knowledge of lectures in 1. – 3. semester		

The previous section is filled only if there is a course-specific exam.

Contents	Basics of control systems, Modelling and analysis of dynamical systems, transfer functions, frequency response, standard linear blocks, standard PID- controller, design of single loop systems, stability analysis, FRA design of PID controller.
Literature	
Remarks	

05.03.2020

Module Course: Control System Basics (Practical training)

(of Module: Control System Basics)

Course Type	Practical Training	**Form of Learning**	Presence
Mandatory Attendance	yes	**ECTS Credit Points**	1
Participation Limit		**Semester Hours per Week**	1
Group Size	12	**Workload (hours)**	30
Teaching Language	English	**Presence Hours**	12
Study Achievements ("Studienleistung", SL)	Practical Training	**Self-Study Hours**	18
SL Length (minutes)		**SL Grading System**	Participation

The following section is filled only if there is a course-specific exam.

Exam Type		**Exam Language**	
Exam Length (minutes)		**Exam Grading System**	
Learning Outcomes			
Participation Prerequisites	Knowledge of lectures in 1. – 3. semester		

The previous section is filled only if there is a course-specific exam.

Contents	Measurement of step responses and bode plots, design, realization and test of simple speed control
Literature	
Remarks	