Valid from 2024.HS

Module description: Mess- und Regelungstechnik 1

Module Code	t.BA.MT.MRT1.19HS
ECTS Credits	2
Language of Instruction/Examination	German
Organizational Unit	IEFE
Module Coordinator	Andrea Giovanni Beccuti
Legal Framework	The module description is part of the legal basis in addition to the general academic regulations. It is binding. During the first week of the semester a written and communicated supplement can specify the module description in more detail.
Module Characteristic	Type 1c 4 consecutive lab lessons bi-weekly per semester and half-class
Module Description	Modelling of dynamic systems. Classification of steady state and dynamic system behaviour. Introduction to the Lapalce theory and the concept of transfer function. Representation of dynamic systems with block diagrams of transfer functions. Block diagram algebra.
Module Content	**Lecture:** • - Operating principles of open and closed loop control technology, block diagrams • -Sensors, amplifiers, actuators • - Introduction to modelling of dynamical systems • - Introduction to signals and systems • - Transfer functions • - Block diagram algebra • - Steady state and transient behaviour • - Stability **Labs:** • - Modelling and simulation of general plants • - Steady behavior of general plants • - Dynamical behavior of general plants • - Oscillatory systems
Prerequisite Knowledge	Attendance of IT-Tools during first year of study

Learning Objectives (Competences)

Students...	Competencies	Taxonomies
(1) Students learn the mathematical modelling and simulation of dynamic systems	F, M	K1, K2
(4) The students are introduced to the Laplace theory necessary to work with transfer functions	M, F	K3
(3) The students learn the description of system using transfer function and block diagrams	M, F	K2, K3
(2) They are able to characterize the steady state and dynamical properties of general plants in theory and in practice.	F, M	K1, K2

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Performance Assessment

End-of-module exam	Assessment	Length (min.)	Weighting	Form
written exam	Grade	90	70	acc. to module agreement

Performance assessment during the semester	Assessment	Length (min.)	Weighting	Form
written exam	Grade	60	20	acc. to module agreement
report	Grade		10	acc. to module agreement

Classroom Attendance Requirement	None
Learning material	
Comments	