

<b>Module description: Electrical and Drive Engineeringfor ST</b>			
<b>Module Code</b>	t.BA.ST.EAT.19HS		
<b>ECTS Credits</b>	4		
<b>Language of Instruction/Examination</b>	German		
<b>Organizational Unit</b>	IMS		
<b>Module Coordinator</b>	Alberto Colotti		
<b>Legal Framework</b>	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.		
<b>Module Characteristic</b>	Type 3b  2 lecture lessons per semester week and class+ 4 lab bi-weekly lessons per semester and half-class		
<b>Module Description</b>	Students acquire the basics of electrical drive systems, including knowledge of the electrical grid, the three-phase theory and transformers. Requirements and design issues of drive systems are covered, as are the main components and behaviour of machines and power electronics for electrical drives.		
<b>Module Content</b>	<p><b>Power grid systgems - Basic components and structure of the electrical grid -three-phase theorie, apparent, active and reactive power -electrical transformator (operation mode, load cases, three phase tranformer in Y/D connection)</b></p> <p><b>Dimensioning of electrical drives - basic mechanical and electrical theory (power, forces, torque) - application and requirements (examples and standards) - design and types of drive systems (structures, properties)</b></p> <p><b>DC Motor drives - Permanent magnet DC Motor (structure, magnetic circuit, properties and parameters) - power electronics components and basic concept (Buck Converter, Synchronous Rectifier and H-Bridge as DC Motor Supply)</b></p> <p><b>Electronic Commutated Motores - Structure, components and function of the EC Motor - three phase bridge as drive of EC-Motors, six-step mode</b></p> <p><b>Drives with Induction Machines - Squirell cage induction motor, structure, components and function - Soft Starter</b></p> <p><b>Stepper Motors - Topologies and properties - Hybrid Stepper Motors - drives, full- and microstepping</b></p>		
<b>Prerequisite Knowledge</b>	Basics of electricity and electronics		
<b>Learning Objectives (Competences)</b>	<b>Students...</b>	<b>Competencies</b>	<b>Taxonomies</b>
	They know about the requirements to design an electrical drive to meet the needs for a specific application	F, M	K2, K3, K4
	They know the most important properties of the components of a power electronic system and are able to explain their main characteristic values	M, F	K2, K3, K4
	They can explain the function of the most important electrical drive systems	F	K2, K3
	Students know the structure of the electrical power network and can explain the function of the main components	F	K2

## Module description: Electrical and Drive Engineeringfor ST

<b>Performance Assessment</b>	<b>End-of-module exam</b>	<b>Assessment</b>	<b>Length (min.)</b>	<b>Weighting</b>	<b>Form</b>	
	written exam	Grade	60	60	acc. to module agreement	
	<b>Performance assessment during the semester</b>					
	written exam	Grade	60	20	acc. to module agreement	
	Lab-Exercises	predicate	180	20	acc. to module agreement	
<b>Classroom Attendance Requirement</b>	None					
<b>Learning material</b>	<ul style="list-style-type: none"> <li>Hagl, R. (2013). Elektrische Antriebstechnik. 4 Edition. Carl Hanser. ISBN 978-3-446-43350-2.</li> </ul>					
<b>Comments</b>						