

Module description: Physics 3	
Module Code	t.BA.MOP.PHY3.24HS
ECTS Credits	4
Language of Instruction/Examination	German
Organizational Unit	ICP
Module Coordinator	Andreas Witzig
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 3a 2 lecture lessons per semester week and class+ 2 lab bi-weekly lessons per semester and half-class
Module Description	Physics 3
Module Content	<ul style="list-style-type: none"> • Basic knowhow Electrostatics and electronic components: <ul style="list-style-type: none"> • - Basic terms and concepts (charge, current, potential, voltage, energy, power) • - Simple electronic circuits, current and voltage source, resistor, capacitance, inductivity. • - Physical foundations of drive technology (DC-, synchron-, asynchron- und step motor) • Basic and more specialized knowhow in mechanics and machine technology • In general: <ul style="list-style-type: none"> • - Technical drawing • - Mechanics (forces, moments, stress) • Machine elements: <ul style="list-style-type: none"> • - Stock • - Gearbox, axles, shafts • - Drive technology and motors • - Hydraulics/Pneumatics • Physical basics of the manufacturing technique • - Materials • - Material technology • Implementation in practice through prototyping in the practical training: <ul style="list-style-type: none"> • - CAD • - Lasercutter • - 3D printing • - Light emitting diodes and electric motors
Prerequisite Knowledge	Basics from the previous subjects of analysis and physics

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Learning Objectives (Competences)	Students...	Competencies	Taxonomies																
	Students know the basic physical terms from material and production engineering	F	K1, K2																
	They are able to produce assemblies or products with the help of self-created data sets (CAD) of rapid prototyping parts (e.g. 3D printing, laser cutting).	F	K1, K2, K3, K4																
	Students have the basic knowledge of static mechanics: forces, torques, states of stress.	F	K1, K2, K3																
	Basic physical knowledge of the following machine elements: Bearings, gears, drive technology and engines, axles/shaft, chains/belts, hydraulics/pneumatics Selected machine elements are deepened in exercises and self-tests	F, SE, SO	K1, K2, K3																
	They are able to understand a technical drawing and to apply it to a real assembly	F	K1, K2																
	Basic knowledge of drive technology and energy distribution	F	K1, K2																
	Basic knowledge of electrostatics and basic electronics: Simple circuits, switch-on and switch-off processes with resistors, capacitances and inductors. Computer simulations for signal characteristics	F	K1, K2, K3																
Performance Assessment	<table border="1"> <thead> <tr> <th data-bbox="485 1025 730 1106">End-of-module exam</th> <th data-bbox="738 1025 895 1106">Assessment</th> <th data-bbox="903 1025 1059 1106">Length (min.)</th> <th data-bbox="1067 1025 1198 1106">Weighting</th> <th data-bbox="1206 1025 1466 1106">Form</th> </tr> </thead> <tbody> <tr> <td data-bbox="485 1106 730 1182">written exam</td> <td data-bbox="738 1106 895 1182">Grade</td> <td data-bbox="903 1106 1059 1182">90</td> <td data-bbox="1067 1106 1198 1182">40</td> <td data-bbox="1206 1106 1466 1182">acc. to module agreement</td> </tr> </tbody> </table>				End-of-module exam	Assessment	Length (min.)	Weighting	Form	written exam	Grade	90	40	acc. to module agreement					
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Classroom Attendance Requirement	None																		
Learning material																			
Comments																			