

<b>Module description: Physics 3</b>					
<b>Module Code</b>	t.BA.STP.PHY3.19HS				
<b>ECTS Credits</b>	4				
<b>Language of Instruction/Examination</b>	German				
<b>Organizational Unit</b>	IAMP				
<b>Module Coordinator</b>	Stephan Scheidegger				
<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 3a  2 lecture lessons per semester week and class+ 2 lab bi-weekly lessons per semester and half-class				
<b>Module Description</b>	Physics 3 addresses wave phenomena. Physical and mathematical descriptions are developed for mechanical waves. Electromagnetic waves and electromagnetic phenomena are discussed. Different approaches to optical phenomena are explained. The last part deals with the quantum mechanical description of matter and light.				
<b>Module Content</b>	<ul style="list-style-type: none"> <li>• Mechanical Waves (Transversal, longitudinal, sound), standing waves, intervals and spectrum, dispersion, reflections, wave impedance, Doppler effect, sound level measures</li> <li>• Maxwell's equations, electromagnetic waves</li> <li>• Optics (based on geometrical description as well as wave phenomena)</li> <li>• Introduction into quantum mechanics and applications</li> <li>• Introduction into nuclear physics, radioactive decay</li> </ul>				
<b>Prerequisite Knowledge</b>	Physics 1&2, Mathematics of the 1st Year				
<b>Learning Objectives (Competences)</b>	<b>Students...</b>		<b>Competencies</b>	<b>Taxonomies</b>	
	are able to trace electromagnetic phenomena back to the Maxwell's equations.		F	K3, K4	
	are able to choose an appropriate description of optical phenomena and for atoms and the interaction of light with matter. They understand the fundamental concepts of quantum-, atomic- and nuclear physics needed for the specialisation in biomedical engineering and the photonics profile.		F	K1, K2, K3	
	can implement and use numerical methods and computer simulations for exploring wave phenomena and to apply them to engineering applications.		F, M	K2, K3, K4, K5	
	are able to use qualitative and quantitative descriptions of waves (mechanical, electromagnetic, light) for engineering purposes.		F	K1, K2, K3	
<b>Performance Assessment</b>	<b>End-of-module exam</b>	<b>Assessment</b>	<b>Length (min.)</b>	<b>Weighting</b>	<b>Form</b>
	oral exam	Grade	15	100	acc. to module agreement
	<b>Performance assessment during the semester</b>		<b>Assessment</b>	<b>Length (min.)</b>	<b>Weighting</b>
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<b>Classroom Attendance Requirement</b>	None
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<b>Learning material</b>	
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<b>Comments</b>	
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