

# PHY-M-VS 10

Effective WS 2011/12

<b>1. Module title:</b>	<b>Electronics</b>
<b>2. Field / responsibility of:</b>	Physics / the department, the Dean of Studies
<b>3. Module contents:</b>	Practice-oriented introduction to modern electronics: <ul style="list-style-type: none"> <li>• Important laws of electrical engineering</li> <li>• Passive components</li> <li>• Physical principles of semiconductor technology</li> <li>• Semiconductor diodes</li> <li>• Bipolar transistors</li> <li>• Introduction to power electronics</li> <li>• Field-effect transistors</li> <li>• Operational amplifier: Fundamentals and important circuits</li> <li>• Fundamentals of digital technology</li> <li>• Static and dynamic digital components</li> <li>• Analog-to-digital converters</li> </ul>
<b>4. Qualification objectives of the module / competencies to be acquired:</b>	Students will lose their fear of electronics. They will understand the principles of modern electronic circuits of analog and digital technology. They will be able to independently design, assemble, test and operate smaller circuits. In addition, they will learn many basic principles of electronic measurement techniques.
<b>5. Prerequisites for participation:</b>	
<b>a) Recommended knowledge:</b>	None
<b>b) Prerequisite courses:</b>	None
<b>6. Module can be used for:</b>	M.Sc. (and B.Sc.) in Physics, Nanoscience, Teacher Training for Academic Secondary School, Teacher
<b>7. Module is offered:</b>	On a semiannual basis
<b>8. Module can be completed in:</b>	1 semester
<b>9. Recommended semester of study:</b>	1
<b>10. Overall module workload / number of credit points:</b>	<b>Workload:</b> <b>Total number of hours: 180</b> <b>Allocation:</b> <b>1. Attendance: 4 credit hours</b> <b>2. Independent study (including exam preparation/ exam): 120 hours</b> <b>Credit points: 6</b>
The successful completion of all assignments listed in items 11 and 12 is a prerequisite for receiving the credit points mentioned in item 10.	

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<b>11. Module components:</b>						
<b>Nr.</b>	<b>Req./req. elective</b>	<b>Form of teaching</b>	<b>Subject area/topic</b>	<b>Credit hours</b>	<b>Coursework</b>	
PHY-M-VS 1 0.1	Compulsory	Lecture Practical course	Electronics	4	Successful completion of the practical exercises across all course topics; project work	
<b>12. Module exam:</b>						
<b>Nr.</b>	<b>Competence / topic</b>		<b>Type of exam</b>	<b>Duration</b>	<b>Time / notes</b>	<b>Weighting for module grade</b>