

<b>Module title</b>	<b>SM Code</b>	
<b>Lab Course Physics</b>	<b>PPH</b>	
<b>Module lecturer</b>	<b>Faculty</b>	
Dr. Nicole Breidenassel (LBA)	Applied Natural Sciences and Cultural Studies	
<b>Module language</b>	<b>Number of SWS / WSH</b>	<b>ETCS credits</b>
English	2 SWS / WSH	2
<b>Teaching format</b>		
Practical laboratory work		

<b>Semester according to the study plan</b>	
2 <sup>nd</sup> semester (Bachelor)	
<b>Attendance/classroom hours</b>	<b>Additional independent study</b>
28 hours	Preparation and follow-up work: 16 hours Experiment evaluations: 16 hours
<b>Type of examination / Requirements for the award of the credit points</b>	
Practical performance assessment	

<b>Teaching content</b>
<ul style="list-style-type: none"> <li>Conducting physical experiments and measurements</li> <li>Handling of oscilloscopes and other laboratory equipment</li> <li>Evaluation of measurement series, error estimation, statistics</li> <li>Graphical representation of measurement series using Excel</li> <li>Oscillations, standing waves, resonance, coupled oscillations</li> <li>Fourier analysis and synthesis using harmonic generators and oscilloscopes</li> <li>Interference at the optical grating</li> <li>Fundamentals of geometric optics, speed of light</li> </ul>

- Waves using the example of signal transport in coaxial cables
- Properties of microwaves
- Michelsen interferometer
- Solar cell

### Learning objective: Professional competence

**After successfully completing this module, students will be able to**

- conduct independent simple experiments and evaluate the results (3)
- attribute measurement results to their physical principles (3)
- correctly use appropriate evaluation software (2)
- apply error estimation, error calculation, and statistical methods (2)
- clearly formulate and evaluate experimental results. (3)

### Learning objective: Personal competence

**After successfully completing this module, students will be able to**

- work in an experimental team (2)
- justify measurement results (3)
- distinguish clearly between own and external measurement results (3)
- reflect critically on the test results (3)

### Literature

#### Recommended reading

- Kuypers, F. (2012). *Physik für Ingenieure und Naturwissenschaftler*. Wiley-VCH
- Hering, E., Martin, R., & Stohrer, M. (2012). *Physik für Ingenieure*. Springer-Verlag
- Walcher, W. (2006). *Praktikum der Physik*. Springer Vieweg

The numbers in brackets indicate the levels to be achieved: (1)-know | (2)-can | (3)-understand and apply