

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

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

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

- Waves using the example of signal transport in coaxial cables
- Properties of microwaves
- Michelson 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