Module title		SM Code
Physics		**PH**
Module lecturer	**Faculty**	
Dr. Nicole Breidenassel	Applied Natural Sciences and Cultural Studies	
Module language	**Number of SWS / WSH**	**ETCS credits**
English	4 SWS / WSH	5
Teaching format		
Seminar-based teaching with approx. 15% practical component		

Semester according to the study plan	
1st semester	
Attendance/classroom hours	**Additional independent study**
56 hours	Preparation and follow-up work: 70 hours Exam preparation: 24 hours
Type of examination / Requirements for the award of the credit points	
Written exam: 90 minutes	

Teaching content

- Kinematics: Linear motion, circular motion
- Dynamics: Newton's axioms, forces, friction
- Conservation laws: Energy, momentum
- Oscillations: Simple harmonic oscillation, forced oscillation, resonance
- Waves: Wave function, interference, standing waves, diffraction
- Fundamentals of optics: Refraction, dispersion
- Practical applications

Learning objective: Professional competence

After successfully completing this module, students will be able to

- understand basic physical relationships in the field of classical mechanics and wave theory (1).
- set up equations for simple physical problems in mechanics and wave theory (2) and solve them (2).
- establish the connection between practical applications and the underlying physical theories (3).
- understand physical problems in mechanics and wave theory (3), determine appropriate solutions (2), and interpret the result (3).

Literature

Recommended reading

- F. Kuypers, Physik für Ingenieure und Naturwissenschaftler, 3rd ed., vols. 1–2. WileyVCH Verlag, 2012
- Halliday et al., Halliday Physik, 3rd ed. Wiley-VCH Verlag, 2017
- H. Stroppe, Physik für Studierende der Natur- und Ingenieurwissenschaften, 16th ed. Carl Hanser Verlag, 2018

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