

Course Manual PH1

Physics 1

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– General information

Long name Physics 1

Approving CModule [PH1_BaET](#)

Responsible Prof. Dr. Uwe
Oberheide
Professor Fakultät IME

Valid from summer semester 2021

Level Bachelor

Semester in the year summer semester

Duration Semester

Hours in self-study 60

ECTS 5

Professors Prof. Dr. Uwe
Oberheide
Professor Fakultät IME

Requirements Functions (sin, cos, exp, ln)
Equations and systems of equations (linear, quadratic)
Analysis (differential and integral calculus)
Linear algebra (2-/3-dim vector calculation)

Language German

Separate final exam Yes

Literature

Tippler, Mosca; Physik (Springer Spektrum)

Giancoli; Physik Lehr- und Übungsbuch (Pearson)

Halliday, Resnick, Walker; Halliday Physik (Wiley-VCH)

Final exam

Details

Written examination, oral examination only in individual cases, with the following elements:

- Multiple choice and assignment questions to query fundamental concepts, relationships and analogies
- Free-text answers to query further knowledge and the basic understanding of physical relationships
- Preparation of sketches to test further understanding
- Application-oriented text tasks, whose solutions make it necessary to analyze and reduce the physical problems, select a suitable model and apply it mathematically.

Minimum standard

50 % of the questions and tasks correctly solved

Exam Type

EN Klausur

– Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	<p>Mechanics of rigid bodies</p> <ul style="list-style-type: none">- Physical quantities and units- Kinematic (temporal description of linear and rotary motion)- Analogy of linear and rotary motion- One-dimensional motion- Multidimensional motion and projectile motion- Dynamics (forces, apparent forces, frictional forces, Newton's axioms)- Work, energy, energy conservation- Momentum, momentum conservation and impact processes- Torque and moment of inertia- Angular momentum and its conservation <p>Mechanism of deformable body</p> <ul style="list-style-type: none">- Elastic and plastic deformation- Tension, pressure
Skills	<p>Recognize and apply analogies, e.g. linear and rotary motion</p> <p>Derive balance of power and set up equations of motion</p> <p>Derive energy balances and determine the states of motion from energy conservation</p> <p>Derive momentum balances and determine motion states from the momentum conservation</p> <p>Analyze simple physical problems, apply physical models and calculate with them</p>

Special requirements

none

Accompanying material

Presentation slides for the lecture
Collection of exercise tasks with solutions
Questionnaire to prepare the exam
Links to Internet resources with basic information

Separate exam

No

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	3
Exercises (whole course)	2
Exercises (shared course)	0
Tutorial (voluntary)	0

