

t.PHEMS1 - Physik 1 für ET, MT, ST

Person responsible for the course: Ralf Markendorf, mklf

Credits: 4

Valid for: 2010/2011

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Learning objectives:

Tools: Students get familiar with the physical way of thinking and working by means of well-chosen issues from nature and technology. That includes experiments and modeling, analogies and recognition of physical structures. Students are capable of checking results in principle by considering limiting cases, assessing their plausibility, performing estimations and comparing them with empirical values from technology and science.

Knowledge: Students understand the basics of mechanics and are able to apply them qualitatively and quantitatively to phenomena from nature and technology.

Terms, concepts: equation of motion, functions of motion, state variable, process variable, frequency, angular frequency

Course content:

Kinematics (repetition only): Fundamental kinematic terms and values, kinds and functions of motion, interpreting diagrams, motions in 1D and 2D, selected problems in kinematics (e.g. centripetal acceleration, 2D-trajectories)

Dynamics: Frame of reference, law of inertia, inertial frames, Newton's law of motion, Newton's third law, particular forces, selected problems in dynamics (e.g. oscillations, circular motion, gravity, motion under viscose friction)

Energy: Work, energy, potential and kinetic energy, power, selected problems in energy

Introduction into fluid dynamics: ideal fluids: continuity equation, Bernoulli's equation, real fluids: Stokes' friction, viscosity, laminary and turbulent flows

Previous knowledge:

Physics teached during BMS (professional secondary school)

Teaching method:

Type of lesson:	Number of lessons per week:
Lecture	14*2
Tutorial/Practicum	14*2
Group teaching	
Block instruction	
Seminar	

Assessment:

According to the table or as specified in writing by the lecture at the beginning of the semester!

Number	Type	Weighting
	End of term exam	60%
	Exam during the semester	2 x 20%
	Further assessments	

Language of instruction:

german

Instruction material:

lecture notes on lectures/exercise courses/laboratory

Comments:

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