

Pharmacy Physics
Autumn semester, 2024/25

Week	Date	Number	Title	Lecturer
1	9, Sept	1-2	Kinematics and dynamics of a point of mass. Basic kinematics concepts: coordinate system, reference frame, position vector, trajectory, path, displacement, velocity vector, acceleration vector. Mean, change, rate of change, average rate of change of a time-dependent quantity. Graphical introduction and illustration of time differentiation and integration: tangent to direction, area under curve. Free falls and deflections. Basics of the dynamics of a point of mass. Axioms of mechanics. Inertia system. Types of forces. Equation of motion. Mass and weight.	DBA
2	16, Sept	3-4	Energy and momentum conservation. Work, energy, performance. Kinetic energy and work rate. Conservative force field and potential energy. Conservation of mechanical energy theorem. Momentum and conservation of momentum in collisions.	VZ
3	23, Sept	5-6	Circular motion, harmonic oscillation, wave motion. Circular motion, uniform circular motion. Harmonic oscillatory motion as a projection of circular motion, damped oscillation, forced oscillation, resonance. Waves. Frequency, amplitude, wavelength. Interference.	ZF
4	30, Sept	7-8	Fluid mechanics. Statics of fluids, location dependence of pressure in gravity: hydrostatic pressure, buoyancy, Archimedes' law, buoyancy. Pascal's law. Fluid flow. Types of flow, basic laws of steady flow: continuity equation, Bernoulli's equation and applications. Surface tension, capillarity.	KT
5	7, Oct	-10	Fundamentals of thermodynamics. Empirical temperature. Zero Theorem. Measurement of temperature. Thermal expansion. Work and heat. Volumetric work. Internal energy. First law of thermodynamics. Heat capacity, specific heat. Equations of state of an ideal gas. Reversible and irreversible processes. Second law of thermodynamics. Entropy. Probabilistic interpretation of diffusion, Brownian motion, Fick's laws.	NE
6	14, Oct	11-12	Electric charge, Coulomb's law, electric field characteristics. Electric potential, voltage. Direct current. Ohm's law. Kirchhoff's laws. Work of direct current. Electric work, power.	SzGT
7	21, Oct	13-14	Magnetism. Magnetic field properties. Flux. Magnetic induction: rest, motion. Lorentz force. Induction of alternating current, its properties, alternating current resistors. Work, power of alternating current	PF
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