

# University of Pretoria Yearbook 2021

## First course in physics 114 (PHY 114)

**Qualification** Undergraduate

**Faculty** Faculty of Natural and Agricultural Sciences

**Module credits** 16.00

**NQF Level** 05

**Programmes** BEd Senior Phase and Further Education and Training Teaching

BSc Computer Science

BSc Applied Mathematics

BSc Chemistry

BSc Engineering and Environmental Geology

BSc Geology

BSc Mathematics

BSc Meteorology

BSc Physics

**Service modules** Faculty of Engineering, Built Environment and Information Technology

Faculty of Education

**Prerequisites** A candidate must have passed Mathematics and Physical Science with at least 60% in the Grade 12 examination

**Contact time** 1 discussion class per week, 1 practical per week, 4 lectures per week

**Language of tuition** Module is presented in English

**Department** Physics

**Period of presentation** Semester 1

### Module content

SI-units. Significant figures. Waves: intensity, superposition, interference, standing waves, resonance, beats, Doppler. Geometrical optics: Reflection, refraction, mirrors, thin lenses, instruments. Physical optics: Young-interference, coherence, diffraction, polarisation. Hydrostatics and dynamics: density, pressure, Archimedes' principle, continuity, Bernoulli. Heat: temperature, specific heat, expansion, heat transfer. Vectors. Kinematics of a point: Relative, projectile, and circular motion. Dynamics: Newton's laws, friction. Work: point masses, gasses (ideal gas law), gravitation, spring, power. Kinetic energy: Conservative forces, gravitation, spring. Conservation of energy. Conservation of momentum. Impulse and collisions. System of particles: Centre of mass, Newton's laws. Rotation: torque, conservation of angular momentum, equilibrium, centre of gravity.



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