

University of Pretoria Yearbook 2020

First course in physics 114 (PHY 114)

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| Qualification | Undergraduate |
| Faculty | Faculty of Natural and Agricultural Sciences |
| Module credits | 16.00 |
| Programmes | BEd Senior Phase and Further Education and Training Teaching BSc Computer Science BSc Applied Mathematics BSc Chemistry BSc Engineering and Environmental Geology BSc Geography 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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