# University of Pretoria Yearbook 2016

# Quantum mechanics 703 (PHY 703)

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| **Qualification** | Postgraduate |
| **Faculty** | Faculty of Natural and Agricultural Sciences |
| **Module credits** | 15.00 |
| **Prerequisites** | No prerequisites. |
| **Contact time** | 4 lectures per week |
| **Language of tuition** | English |
| **Academic organisation** | Physics |
| **Period of presentation** | Semester 1 |

**Module content**

Origins of quantum mechanics; Mathematical tools; Postulates and quantization; Conservation laws; One-dimensional problems; Linear harmonic oscillator; Three-dimensional problems; Angular momentum; Hydrogen atom; Addition of angular momenta; Spin; Approximate methods (WKB, variational approach, time-independent perturbations); Time-dependent perturbations; Scattering; Partial wave scattering; Identical particles; Hartree-Fock approach; Many-body problems and quantum statistics; Second quantisation; Relativistic equations.