

# University of Pretoria Yearbook 2017

## Quantum mechanics 703 (PHY 703)

**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** Module is presented in 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.

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