

# University of Pretoria Yearbook 2017

## Classical mechanics 702 (PHY 702)

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| <b>Qualification</b>          | Postgraduate   |
| <b>Faculty</b>                | <a href="#">Faculty of Natural and Agricultural Sciences</a> |
| <b>Module credits</b>         | 15.00  |
| <b>Prerequisites</b>          | No prerequisites.  |
| <b>Contact time</b>           | 6 lectures per week  |
| <b>Language of tuition</b>    | Module is presented in English                               |
| <b>Academic organisation</b>  | Physics  |
| <b>Period of presentation</b> | Semester 1   |

### Module content

Lagrangian dynamics: Lagrange's equations, d'Alembert's principle, energy, applications, the tangent bundle, action, symmetry, conservation, Noether's Theorem, linear oscillations, normal modes. Hamiltonian dynamics: Hamilton's equations, symplectic notation, phase space, Liouville's Theorem, Poisson brackets, canonical transformations, generating functions, the Hamilton-Jacobi equation. Elementary Lagrangian field theory.

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