

University of Pretoria Yearbook 2019

Stochastic partial differential equations 846 (WTW 846)

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| Qualification | Postgraduate |
| Faculty | Faculty of Natural and Agricultural Sciences |
| Module credits | 0.00 |
| Prerequisites | Functional analysis, Measure theory, Partial differential equations at honours level. Knowledge of Probability theory is advised but not required |
| Contact time | 1 lecture per week |
| Language of tuition | Module is presented in English |
| Department | Mathematics and Applied Mathematics |
| Period of presentation | Semester 1 or Semester 2 |

Module content

*Consult with the Head of the Department of Mathematics and Applied Mathematics about the availability of this master's module in a particular year.

Generalities on probability theory (random variables, conditional expectations); Martingales; stochastic integrals; Markov processes; existence and uniqueness results for ordinary stochastic differential equations; Sobolev spaces, Aubin-Dubinsky-Simon compactness theorem; convergence of probability measures: Prokhorov and Skorokhod theorems; existence and uniqueness of solutions of stochastic parabolic equations in divergence form: The Galerkin scheme; idea of renormalization group theory in turbulent flows modelled by Navier-Stokes equations with random forcing.

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