University of Pretoria Yearbook 2021

Stochastic partial differential equations 846 (WTW 846)

Qualification	Postgraduate
Faculty	Faculty of Natural and Agricultural Sciences
Module credits	1.00
NQF Level	09
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.