University of Pretoria Yearbook 2022

Functional analysis 710 (WTW 710)

Qualification	Postgraduate
Faculty	Faculty of Natural and Agricultural Sciences
Module credits	15.00
NQF Level	08
Programmes	BScHons (Applied Mathematics)
	BScHons (Mathematics and Mathematics Education) (Algebra and Analysis)
	BScHons (Mathematics and Mathematics Education) (Applied Analysis)
	BScHons (Mathematics of Finance)
	BScHons (Mathematics)
Prerequisites	Real analysis on third-year level
Contact time	2 lectures per week
Language of tuition	Module is presented in English
Department	Mathematics and Applied Mathematics
Period of presentation	Semester 1

Module content

An introduction to the basic mathematical objects of linear functional analysis will be presented. These include metric spaces, Hilbert spaces and Banach spaces. Subspaces, linear operators and functionals will be discussed in detail. The fundamental theorems for normed spaces: The Hahn-Banach theorem, Banach-Steinhaus theorem, open mapping theorem and closed graph theorem. Hilbert space theory: Riesz' theorem, the basics of projections and orthonormal sets.

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