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# University of Pretoria Yearbook 2019

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## Functional analysis 710 (WTW 710)

**Qualification** Postgraduate

**Faculty** [Faculty of Natural and Agricultural Sciences](#)

**Module credits** 15.00

**Programmes** [BScHons Applied Mathematics](#)

[BScHons Mathematics](#)

[BScHons Mathematics and Mathematics Education Algebra and Analysis](#)

[BScHons Mathematics and Mathematics Education Applied Analysis](#)

[BScHons Mathematics of Finance](#)

**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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