



Course Specification Document

Title	Further Topics in Algebra and Analysis
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Credits	4 ECTS
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Aims	This course aims to enable the student generalizing the concepts of limit and convergence in vector spaces.
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Intended learning outcomes

On successful completion of this course, the student will be able to:

- Understand normed spaces and the concepts of convergence and continuity.
- Use the concept of the inner product to define distances and orthogonality in vector spaces.
- Reduce symmetric linear applications and matrices.
- Use computer programs to solve mathematical problems.

Syllabus

- **Normed vector spaces:** Norms in vector spaces, convergence of sequences in normed vector spaces, as well as the limits of functions defined on a subset in normed vector spaces, norm of linear continuous functions.
- **Inner products:** Inner products in a real or complex vector space, Schmidt process to find an orthonormal basis, functions conserving inner product and their properties, reducing symmetric and Hermitian matrices.