2201 (Algebra 3: Further Linear Algebra)

Year: 2016–2017  
Code: MATH2201  
Level: Intermediate  
Value: Half unit (= 7.5 ECTS credits)  
Term: 1  
Structure: 3 hour lectures and 1 hour problem class per week. Assessed weekly coursework.  
Assessment: 90% examination, 10% coursework. In order to pass the module you must have at least 40% for both the examination mark and the final weighted mark.  
Normal Prerequisites: MATH1202  
Lecturer: Dr I Strouthos  
Problem class teacher: Dr I Strouthos

Course Description and Objectives

The aim of this course is to complete the study of the basic concepts of linear algebra started in the first year. The topics covered have applicability in many areas of mathematics. The ring theory of polynomials over a field is studied. The theory of the diagonalization of matrices is completed and Jordan normal form is introduced. The theory of quadratic forms and orthogonal diagonalization are introduced.

Recommended Texts

Relevant books are: (i) S Lang, Linear Algebra (Springer); (ii) P M Cohn, Elements of Linear Algebra (Chapman and Hall); (iii) P M Cohn, Algebra (Vol 1) (Wiley); (iv) S Lipschutz and M Lipson, Linear Algebra: Schaum’s Outlines (McGraw-Hill); (v) Morton Curtis, Abstract Linear Algebra.

Detailed Syllabus

Polynomial Rings Over a Field

Diagonalization of Matrices Re-visited and Jordan normal form

Linear and quadratic forms
Orthogonal Diagonalization

July 2016 MATH2201