King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics

Math 550 Syllabus

Second Semester 2012-13 (122)

Title: Linear Algebra
Credit: 3-0-3
Textbook: Linear Algebra, by Hoffman and Kunze (2nd edition)
Prerequisite: MATH 280
Objective: This is a first year graduate level course. It is designed to provide an understanding of basic concepts of linear algebra.

Assessment:

- Exam 1: 22% (Wednesday 27 February 2013)
- Exam 2: 22% (Wednesday 10 April 2013)
- Final Exam: 34%
- Class assignments: 22%

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Week	Dates	Section(s)	Topics
1	Jan 26-30	1.1, 2.1, 2.2, 2.3	Fields, vector spaces, subspaces, bases & dimension
2	Feb 02-06	2.4, 3.1	Coordinates, linear transformations
3	Feb 09-13	3.2, 3.3, 3.4	Algebra of linear transformations, isomorphism, representation of transformations by matrices
4	Feb 16-20	3.5, 3.6, 3.7	Linear functionals, the double dual, transpose of a linear transformation
5	Feb 23-27	6.1, 6.2	Introduction to elementary canonical forms, characteristic values
6	Mar 02-06	6.3, 6.4	Annihilating polynomials, invariant subspaces
7	Mar 09-13	6.5, 6.6	Simultaneous triangulation and simultaneous diagonalization, direct sum decompositions
8	Mar 16-20	6.7, 6.8	Invariant direct sums, the primary decomposition theorem
9	Mar 30-Apr 03	7.1, 7.2	Cyclic subspaces and annihilators, cyclic decompositions and the rational form
10	Apr 06-10	7.3, 7.4, 7.5	The Jordan form, computation of invariant factors, semisimple operators
11	Apr 13-17	8.1, 8.2	Inner products, inner product spaces
12	Apr 20-24	8.3, 8.4	Linear functionals and adjoints, unitary operators
13	Apr 27-May 01	8.5, 9.5	Normal operators, spectral theory
14	May 04-08	10.1, 10.2	Bilinear forms, symmetric bilinear forms
15	May 11-15	10.3	Skew symmetric bilinear forms