Advanced Linear Algebra

Math 424 (2715) — Math 524 (2736)

September 4, 2002
revised September 30, 2002 [1]

TIME OF MEETING: Mon, Wed, & Fri 2:30 – 3:25

PLACE: Earth Science 152A

INSTRUCTOR: W. F. Hammond, ES 137A
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Office hours: Mon. & Thurs. 3:30 – 4:30, or by appt.

TEXT: K. Hoffman & R. Kunze, *Linear Algebra*,
2nd edition, Prentice Hall, 1971.

PRE-REQUISITE: Elementary Linear Algebra (Math 220)

COURSE CONTENT

This course presumes a knowledge of linear algebra at the level of the second undergraduate year.

The main topics to be covered are multi-linear algebra (including bilinear forms, Hermitian forms, duality, the tensor product, symmetric and exterior powers for vector spaces) and the theory of rational canonical forms (the similarity problem for square matrices). There will be a very brief review of topics from the elementary course.

Most of what is done in this course will be done over an *arbitrary* field of scalars. While the cases of real scalars and complex scalars have always been regarded as fundamental for "application", it is also the case that competent advanced use of computers with problems in applied linear algebra [a topic beyond this course] requires an understanding of linear algebra over the rational field. There is essentially no additional effort involved in covering the subject for an arbitary field of scalars than is required for coverage of these three basic fields. Additionally, there is substantial reason in many topics arising both in algebra and in geometry for having coverage of more general fields.

TEST SCHEDULE & GRADING:

Event	Weight	Date
Final examination	100	as set by Registrar
Midterm test	50	Mon. Oct. 21, in class
Written Assignments (5@10)	50	as announced
Total weight	200	

[1] Change in office hours