

Math 316 Final Exam information

The exam will be on **Wednesday, May 3, 3:30-5:30 p.m.** in ILB 345

The following topics will be emphasized:

- Complex matrices, in particular Hermitian and unitary matrices (7.2).
- Diagonalization (3.4).
- Unitary diagonalization, Spectral Theorem, normal matrices (7.3).
- Jordan canonical form.

The test will also cover the following topics:

- Linear transformations 5.1 Ex. 1, 7.
- Coordinates of a vector, matrices of a linear transformation. 5.3 Ex. 2, 10.
- Changing coordinates. 5.4 Ex. 1, 3(a), 8, 9, 13.
- Orthogonal and orthonormal sets and bases, Gram-Schmidt algorithm.
6.2 Ex. 1(b,c); 7.1 Ex.16.

Note: You should be able to apply the G-S algorithm to complex vectors as well.

- Complex vectors. 7.1 Ex. 11, 12, 15.
- Theorem of Shur - statement only. 7.3 Ex. 19.

The exam will contain short-answer questions, problems where proofs or explanations are required, and computational problems. Most of the problems on the test will be similar to homework problems (so go over these problems as needed). It is also important to know the definitions and properties discussed in the course. No books, notes, or calculators are allowed on the test.