

**MATH 727-01: LINEAR ALGEBRA AND MATRIX THEORY  
FALL 2018**

**Course number:** MAT 727-01

**Course title:** Linear Algebra and Matrix Theory

**Credits:** 3

**Meetings:** MWF 1:00–1:50 PM, Sullivan 218

**Prerequisites:** Grade of C or better in at least C in MAT 310 and 311 or equivalent

**Instructor information:**

Instructor: Dr. Dan Yasaki [d\\_yasaki@uncg.edu](mailto:d_yasaki@uncg.edu)

Homepage: [http://www.uncg.edu/math/faculty/d\\_yasaki/teaching.html](http://www.uncg.edu/math/faculty/d_yasaki/teaching.html)

Office Hours (146 Petty): Mon 2:00–3:30 pm, Tues 8:30–10:00 am, and by appointment

**For whom planned:** First and second year graduate students

**Catalog description:** Vector spaces. Linear operators and similarity. The eigenvalue problem and a spectral decomposition theorem. Normal forms: Smith form for matrices, rational and Jordan forms. Spectral resolution of matrix functions. Special topics.

**Student learning outcomes:** Upon successful completion of this course students shall be able to

**SLO 1: define** basic terms associated with linear algebra, such as vector space, linear operator, eigenvalues/eigenvectors, normal forms;

**SLO 2: give examples** of spaces, linear maps or matrices exhibiting properties outlined in SLO 1 in addition to examples of applications of linear algebra;

**SLO 3: explain** and give complete, careful statements of definitions and important theorems; and

**SLO 4: construct** and **defend** coherent mathematical proofs of statements in linear algebra.

**Teaching methods and assignments for achieving learning outcomes:**

**Reading:** Reading the sections of the notes and textbook before class is essential if you wish to get the most out of lectures. This allows you to form questions before you see me present the material so that you can focus on the confusing aspects of the topics we discuss. (SLO 1)

**Lectures:** This is the primary method of content delivery. I plan to follow the book closely, but I will supplement the book's material with some of my own notes when questions arise or when I feel it is appropriate. (SLO 1–3)

**Tests:** Tests serve as the primary gauge of evaluation. (SLO 1–4)

**Exercises:** Exercises are the most important way to actually “learn” mathematics. This is the same sort of practice that is used to learn to play tennis or learn to play the piano. One cannot learn these things by watching them on television or reading about them in a book any more than one can learn mathematics by watching a lecture or reading

a mathematics book. Work through all the exercises. Seek help for the ones you don't know how to do. (SLO1-4)

**Evaluation and grading:** A grade of A, B+, B, B-, C+, C, or F will be awarded based on performance on assignments as described below.

**Participation:** Participation counts 10% of your grade. This includes attendance, keeping up with exercises, active participation in class, etc.

**Tests:** Test 1-6 (8/29, 9/19, 10/03, 10/17, 11/07, 11/19) count 10% of your grade each.

**Final Exam:** The final exam (12/05 at 3:30 pm) is cumulative and counts for 30% of your grade.

**Required text:**

Friedberg, Insel, and Spence, *Linear Algebra*, 4<sup>th</sup> ed., Prentice Hall, 2003. ISBN 13: 0-13-008451-4.

**Academic Integrity Policy:** Each student is required to sign the Academic Integrity Policy on all major work submitted for the course.

*I have abided by the UNCG Academic Integrity Policy on this assignment.*

Signature \_\_\_\_\_ Date \_\_\_\_\_

More information can be found at

<https://osrr.uncg.edu/academic-integrity/> .

**Additional information:**

- (1) UNCG seeks to comply fully with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a disability must be registered with the Office of Accessibility Resources and Services (OARS) in 215 Elliott University Center, 334-5440, <http://oars.uncg.edu> .
- (2) Assignments Policy: Assignments are due in class on the due date, and late after 5 pm that day. Late assignments will be accepted at the following lecture period for half credit.
- (3) Absence Policy: You are responsible for all missed material. Any missed assignment, test, or final exam will result in a score of 0. Make-up tests and final exam will be given only if you receive prior approval for a valid excuse by contacting me at least one week in advance.
- (4) Copyright Policy: Selling or purchasing notes from classes for commercial gain is a violation of the UNCG Copyright Policy.

<http://policy.uncg.edu/copyright/>

Any student who sells notes taken in class for commercial gain, or who purchases notes taken by another student for commercial gain, is in violation of this policy and, by extension, is committing a violation of the Student Code of Conduct.

<http://sa.uncg.edu/handbook/student-code-of-conduct/>

- (5) Email Policy: All email correspondence should be made using your UNCG email account. You must check your email regularly for updates and announcements.
- (6) There will be homework exercises that may require the use of computer software.