

VIRGINIA COMMONWEALTH UNIVERSITY  
Department of Mathematics and Applied Mathematics  
Math 610 (Section 001) – Advanced Linear Algebra (3 credit hrs)  
Spring 2024

**Instructor:** Dr Larson  
**Office:** 4106 Harris Hall  
**Email Address:** [clarson@vcu.edu](mailto:clarson@vcu.edu)  
**Web page:** [math1um.github.io](https://math1um.github.io) and Canvas for grades.  
**Classroom and Meeting:** 2132 Harris, 2:00-3:15 TTh  
**Office Hours:** 11:00-12:00 MWF

**Prerequisite(s):** Math 310 (Linear Algebra)

**Text:** *Linear Algebra Done Right, 3<sup>rd</sup> ed*, S. Axler (2015), Springer (ISBN: 978-3-319-30765-7). Free download on VCU Library website (on campus, use: <https://link.springer.com/book/10.1007/978-3-319-11080-6>)

**VCU Bulletin description:** Vector spaces, bases and dimension, change of basis. Linear transformations, linear functionals. Simultaneous triangularization and diagonalization. Rational and Jordan canonical forms.

**Learning Goals:** Our principal aim is to study linear transformations on finite-dimensional vector spaces. The notion of a vector space is very general and encompasses a wide variety of examples across mathematics. We will develop a variety of essentially examples in order to reinforce the central---and abstract---definitions.

**Attendance:** There is no attendance policy per se, but there will be homework and in-class assignments that are due.

**Course Schedule:** This course is based on a set of daily instructor-produced worksheets. We will do one of these in class every class day. It is generally impossible to finish these completely without in-class help and discussion. Tests are based on the text as well as these daily classroom worksheets. We will do Chapters 1,2,3,4,5,6 and 8. The pace will not be predetermined (but will depend on how things go in class from day to day).

### **Goals and Expectations:**

- You are expected to attend class, complete homework, and ask questions during class or office hours.
- When presenting your work, I expect you to show all significant steps that are used to complete each problem. In cases where work is missing, you will not be given full credit.
- I encourage you to work with others on homework problems, however, any assignments to be turned in must be written up on your own. If you work with others, you must write who you worked with on your assignment.
- Please write neatly on all assignments to be graded; exceptionally messy work may not be graded.
- Only selected homework problems will be graded; other problems will be graded for completion.
- **There are no make-ups on in-class assignments.** I will drop your two lowest in-class assignments, assuming that you couldn't come to class for excusable reasons.
- Make up tests will be considered under exceptional circumstances: if you miss a test and want to be considered for a make-up, you *must* contact me immediately.

## Tests and Determination of Grades:

There will be two tests. Here is the *tentative* schedule:

**Test 1**, Thurs., Feb. 29

**Test 2**, Thurs., May 2, 12:30-3:20

- The tests are closed-book and closed-notes.
- The tests will be *closely based on* the in-class assignments and assigned homework.
- Tests are written under the assumption that you are studying the material at least 6 hours per week outside of class.

## Grade weights:

Your final average will be computed as follows:

Test 1:	20%
Homework:	25%
In-class assignments:	35%
Test 2:	20%

**Grade Scale:** The 10-point scale: 90-100 A, 80-89 B, etc.

## Important Dates to Know:

- Last day to withdraw is Fri., Mar. 29
- Spring Break (no classes), Mar. 3-10.
- Classes end on Tues., April 30
- Reading Day, Wed., May 1

## VCU Syllabus Information:

Students should visit [go.vcu.edu/syllabus](http://go.vcu.edu/syllabus) and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.

## VCU Libraries:

Use [VCU Libraries](#) to find and access library resources, spaces, technology and services that support and enhance all learning opportunities at the university.