VIRGINIA COMMONWEALTH UNIVERSITY
Department of Mathematics and Applied Mathematics
Math 511 (Section 001) – Applied Linear Algebra (3 credit hrs)
Fall 2022

Instructor: Dr Larson
Office: 4106 Harris Hall
Email Address: clarson@vcu.edu
Web page: math1um.github.io and Canvas for grades.
Classroom and Meeting: 4155 Harris, 9:30-10:45 TTh
Office Hours: 10:00-11:00 MWF

Prerequisite(s): Math 310 (Linear Algebra)

Text: *Linear Algebra and Learning from Data,* Gilbert Strang, Wellesley- Cambridge Press, 2019 (ISBN: 0692196382)

Software: Each student is required to sign up for a ($14) one semester student subscription to CoCalc (cocalc.com) .

VCU Bulletin description: The algebra of matrices, the theory of finite dimensional vector spaces and the basic results concerning eigenvectors and eigenvalues, with particular attention to applications.

Learning Goals: to learn the mathematics on which data science depends, especially linear algebra, to deepen our understanding of the linear algebra you previously learned (which may or may not have included the important *singular value decomposition),* and to *compute* all of the decompositions and techniques we discuss.

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 1,2,3,4,6 and 7. 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, Tues., Oct. 4
Test 2, Thurs. Dec. 15, 8:00-10:50 (our scheduled FINAL time).

• 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:

- Reading Day (no classes), Fri., Oct. 21
- Last day to withdraw, Oct. 28
- Fall Break, Nov. 21-27
- Classes end, Fri., Dec. 9

VCU Syllabus Information:

Students should visit 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.