SUNY OLD WESTBURY

Department of Mathematics, Computer & Information Science

Advanced Linear Algebra
MA 4160 • SYLLABUS SPRING 2016

Professor: **Frank Sanacory**
Office: **NAB 2014** *Email:* SanacoryF@oldwestbury.edu
Course Web Site: **sanacory.net** *Office Hours:* **M 3:50PM – 4:45PM, TR 5:20PM – 7:00PM**

TEXTBOOK: Linear Algebra Done Right, by Sheldon Axler. Springer; 3rd ed. 2015.
ISBN-10: 3319110799.

PREREQUISITES: Grade of C or higher in Linear Algebra MA 3160 and grade of C or higher in Discrete Mathematics MA 3030.

COURSE DESCRIPTION: This course is a proof based course. We extend the ideas from MA3160: Linear Algebra to more abstract structures and study linear operators in detail. We will study inner product spaces, orthonormal bases and normed spaces, duality on infinite dimensional vector spaces, spectral theorems and the decomposition of operators . This course in a sense is backwards form the traditional treatment of linear algebra. The last idea introduced is the determinant (a MA 3160: Linear Algebra topic). We will introduce the determinant from scratch and define it in geometric or combinatorial terms.

COURSE OBJECTIVES: As in all proof based courses, the student should be able to write complete and clear mathematical proofs. Also the successful student should be able to compute a dual space, compute minimal polynomials, use the Canonical Forms. And identify an inner product space and prove that the space is an inner product space. rove the basic properties. Compute spectra and the decompositions of Linear Operators.

And a successful should know what the determinant is.

COURSE EVALUATION & GRADING: Your grade for the course will be based on your homework/quiz performance (15%), two tests (50%) and a comprehensive final exam (35%).

A = [94, 100]	B+ = [87, 89]	C+ = [77, 79]	D+ = [67, 69]	
A- = [90, 93]	B = [84, 86]	C = [74, 76]	D = [64, 66]	F = [0, 59]
	B- = [80, 83]	C- = [70, 73]	D- = [60, 63]	

CALCULATOR: No calculator is allowed nor needed.

OFFICE OF SERVICES FOR STUDENTS WITH DISABILITIES: SUNY/Old Westbury is committed to assuring that all students have equal access to learning and extracurricular activities on campus. If you have, or suspect you may have a physical, psychological, medical or learning disability that may impact how you function academically and/or your access to activities on campus, please contact Dr. Lisa Whitten, Director of the Office of Services for Students with Disabilities (OSSD). She will work with you to determine which accommodations you need, and provide you with documentation for your professors. The OSSD is located in the NAB, Room 2064. OSSD services are free and confidential. In addition, we hire qualified note takers at $100.00 for the semester if you are enrolled in the course, and $9.00 an hour if you are not. You can reach Dr. Whitten at 516-876-3009 or whittenl@oldwestbury.edu.

RESPECT: No cell phones in class and no texting.
FINAL EXAM: Will be held May 19, 2016 in our regular classroom at the regular class time.

Topics Covered

We will cover Chapters 1 through 10 in this book. Chapters 4 and 9 we will only see quick overview and in Chapter 3 we will skip quotient spaces.