



Davao del Sur State College
Brgy. Matti, Digos City, Davao del Sur

Math 607: Linear Algebra



Linear Algebra



TABLE OF CONTENTS

	PAGE
PREFACE	i
TITLE PAGE	ii
TABLE OF CONTENTS	iii
 MODULE 1: Matrices and Systems of Linear Equations	 1
Lesson 1.1: Matrices, Matrix Operations, and Their Algebraic Properties	2
Lesson 1.2: Special Types of Matrices and the Row Echelon Form	5
Lesson 1.3: Elementary Matrices, Matrix Inverses, and Systems of Linear Equations	8
Module Summary	11
Module Assessment	11
References	12
 MODULE 2: Determinants	 13
Lesson 2.1: The Determinant Function and Cofactor Expansion	14
Lesson 2.2: Properties of Determinants	16
Lesson 2.3: Applications of Determinants: Cramer's Rule and the Adjugate	18
Module Summary	20
Module Assessment	21
References	21
 MODULE 3: Real Vector Spaces	 22
Lesson 3.1: Real Vector Spaces and Subspaces	23
Lesson 3.2: Span, Linear Independence, Basis, and Dimension	25
Lesson 3.3: Rank of a Matrix, Coordinates, and Isomorphism	28
Module Summary	31
Module Assessment	31
References	31
 MODULE 4: Linear Transformations, Eigenvalues, and Inner Product Spaces	 32
Lesson 4.1: Linear Transformations and Their Matrix Representations	33
Lesson 4.2: Eigenvalues, Eigenvectors, and Diagonalization	35
Lesson 4.3: Inner Product Spaces and Orthogonality	38
Module Summary	41
Module Assessment	41
References	42



APPENDICES

Rubrics for Assessment	43
Course Syllabus	44

