DEREE COLLEGE SYLLABUS FOR: MA 1024 ALGEBRA AND TRIGONOMETRY	**US CR: 3/0/3**
(Spring 2024)	
PREREQUISITES:	None
CATALOG DESCRIPTION:	A course intended to provide mathematical background in algebra and trigonometry with a function/graph emphasis required in courses for science and engineering. Properties and Graphs of Polynomial, Rational, Exponential, Logarithmic, Trigonometric, and Inverse trigonometric functions. Asymptotes. Composite and Inverse Functions. Trigonometric Identities and Formulas. Trigonometric Equations. Laws of Sines and Cosines. Matrices and Determinants. Vectors. Dot Product. Cross Product.
RATIONALE:	The purpose of this course, intended for incoming students, is to reinforce basic algebra techniques and introduce the concepts of real functions, trigonometry, and vector analysis. The course focuses on quantitative reasoning to provide a base for developing a quantitatively literate college graduate, who should be able to apply simple mathematical methods to the solution of real-world problems.
LEARNING OUTCOMES:	*As a result of taking this course, the student should be able to:* 1. Demonstrate understanding of the concept of a function and its properties and show ability to analyze and create graphs of functions. 2. Show ability to analyze quantitative information and interpret the behavior of functions in various practical applications using algebraic techniques. 3. Use trigonometric concepts to model applications in science and engineering and provide analytic solutions. 4. Demonstrate knowledge of the concepts of geometry in plane and space and apply operations between vectors.
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: • Lectures and class discussions. • Homework assignments. • Office hours held by the instructor to provide further assistance to students. • Use of library facilities for further study and preparation for the exams. • Use of the Blackboard course management platform to further support communication, by posting lecture notes, assignment instruction, timely announcements, formative quizzes and online submission of assignments.
ASSESSMENT:	**Summative:** 1st assessment: Midterm examination (written, 1 hour) — **40%** 2nd assessment: Portfolio of student work — **10%** Final assessment: Final examination (written, 2 hours) — **50%** ▪ The first assessment tests Learning Outcomes 1, 2. ▪ The second assessment tests Learning Outcomes 1, 2, 3, 4. ▪ The final assessment tests Learning Outcomes 1, 2, 3, 4. The final grade for this module will be determined by averaging all summative assessment grades, based on the predetermined weights for each assessment. Students are not required to resit failed assessments in this module. Failure to pass the module results in module repeat.

INDICATIVE READING:	**REQUIRED READING:** Ron Larson, *Algebra and Trigonometry*, 11th Edition (2022), Cengage **RECOMMENDED READING:** • J. Stewart, L. Redlin, and S. Watson, *Precalculus: Mathematics for Calculus*, 7th International Metric Edition (2017), Cengage • C. Y. Young, *Algebra and Trigonometry*, 5th Edition (2021), Wiley
INDICATIVE MATERIAL:	**REQUIRED MATERIAL:** N/A **RECOMMENDED MATERIAL:** • College Mathematics • Mathematics Magazine • American Mathematical Monthly
COMMUNICATION REQUIREMENTS:	Oral and written communication skills using academic / professional English.
SOFTWARE REQUIREMENTS:	Software associated with the course textbook's digital learning resources.
WWW RESOURCES:	http://mathworld.wolfram.com http://mathacademy.com https://www.khanacademy.org/math
INDICATIVE CONTENT:	**1. Linear and Quadratic Functions** 1.1. Functions and their Properties 1.2. Linear Functions 1.3. Quadratic Functions 1.4. Graphs of Linear and Quadratic Functions 1.5. Applications of Linear and Quadratic Functions **2. Polynomial and Rational Functions** 2.1. Polynomial Functions 2.2. Rational Functions 2.3. Graphs of Rational Functions - Asymptotes 2.4. Applications of Polynomial and Rational Functions **3. Exponential and Logarithmic Functions** 3.1. Composite and Inverse Functions 3.2. Exponential Functions 3.3. Logarithmic Functions 3.4. Exponential and Logarithmic Equations 3.5. Applications of Exponential and Logarithmic Functions **4. Trigonometric Functions** 4.1. Angles and Right Triangle Trigonometry 4.2. Trigonometric Functions and Graphs 4.3. Inverse Trigonometric Functions 4.4. Applications of Trigonometric Functions **5. Analytic Trigonometry** 5.1. Trigonometric Identities 5.2. Solutions of Trigonometric Equations 5.3. Trigonometric Formulas 5.4. Laws of Sines and Cosines **6. Vectors in the Plane and in Space** 6.1. Vectors and Operations 6.2. The Dot Product 6.3. Matrices and Determinants 6.4. The Cross Product