DEREE COLLEGE SYLLABUS FOR: MA 1008 COLLEGE ALGEBRA

US CREDITS: 3/0/3

(FALL 2021)

PREREQUISITES:	None
CATALOG DESCRIPTION:	A course intended to provide mathematical background in algebra with a function/graph emphasis required in Calculus courses. Linear, Quadratic, Polynomial, Rational, Radical, Exponential, Logarithmic functions and their graphs. Composite and Inverse functions. Asymptotes and Continuity via Limits. Matrices and Determinants. Solution of systems of linear equations. Sequences and Series.
RATIONALE:	The purpose of this course, intended for incoming students, is to reinforce basic algebra techniques and introduce the concepts of real functions and matrix algebra. 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:	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. Apply matrix algebra to solve systems of linear equations using matrices and determinants. 4. Demonstrate knowledge of the concepts of sequences and finite series by classifying arithmetic and geometric sequences and evaluate terms and sums.
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: ➢ Class lectures, class discussion, and practical problems solved in class. Furthermore, interactive learning, group work and online presentations may be used. ➢ Exercises and primary source documents are assigned as homework, the solutions of which are reviewed in class. Computer software will be available both as a teaching aid and as the medium for solving problems. ➢ Office hours: Students are encouraged to make full use of the office hours of their instructor, where they can ask questions, see their exam paper, and/or go over lecture material. ➢ Use of the blackboard site, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources.
ASSESSMENT:	Summative:

First assessment (In-class, 1 hour)	40%	Solving exercises & problems
Second assessment (Portfolio)	10%	Homework using online digital resources for problem-solving to promote critical thinking in applications of related topics.
Third assessment, (In-class, 2 hours)	50%	Solving exercises & problems

- The first assessment (midterm exam) tests Learning Outcomes 1, 2.
- The second assessment (portfolio) tests Learning Outcomes 1, 2, 3, 4.
- The third assessment (final exam) tests Learning Outcomes 1, 2, 3, 4.

The final examination is comprehensive. Average grading applies.

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, *College Algebra*, Latest Edition, Cengage **RECOMMENDED READING:** • Barnett, R. E., Ziegler, M. R., Byleen, K. E. and Sobecki, D., *Precalculus*, 7th ed., (2015), McGraw Hill • Sullivan M., College Algebra, 9th ed., (2012), Pearson
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 and their Properties 1.3. Quadratic Functions and their Properties 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. Properties of Rational Functions 2.3. The Graph of a Rational Function. Asymptotes via Limits 2.4. Continuity of Functions via Limits 2.5. Applications of Polynomial and Rational Functions **3. Exponential and Logarithmic Functions** 3.1. Composite and Inverse Functions 3.2. Exponential Functions and Properties 3.3. Logarithmic Functions and Properties 3.4. Exponential and Logarithmic Equations 3.5. Applications of Exponential and Logarithmic Functions **4. Systems of Linear Equations** 4.1. Matrix Algebra and Operations 4.2. Systems of Linear Equations: Matrices 4.3. Determinants **5. Sequences and Series** 5.1. Arithmetic and Geometric Sequences 5.2. Arithmetic and Geometric Series