ROWAN UNIVERSITY
Department of Mathematics

Master Syllabus
Math 01 124 – Reasoning with Function (3 SH)

CATALOG DESCRIPTION: This college level course is designed to prepare students to enter Calculus T&A (or Precalculus) and succeed in coursework that requires a thorough knowledge of functions and algebraic reasoning. It provides students a strong foundation in functions and their behavior by using multiple representations and explicit covariational reasoning to investigate and explore quantities, their relationships, and how these relationships change. Additionally, this course provides students with the algebraic tools necessary to analyze a variety of function types.

OBJECTIVES:

- Students will use multiple representations of polynomial, root, absolute value, piecewise-defined, rational, exponential, and logarithmic functions to investigate quantities, describe relationships between quantities, and attend to how two quantities change together.
- Students will describe characteristics of different function types and convert between different representations and algebraic forms to analyze and solve meaningful problems.
- Students will identify and apply algebraic reasoning to write equivalent expressions, solve equations, and interpret inequalities.

PREREQUISITES:

Appropriate test scores.

CONTENT:

Chapter 1: Prerequisites

1.1 Real Numbers: Algebra Essentials
1.2 Exponents and Scientific Notation
1.3 Radicals and Rational Exponents
1.4 Polynomials
1.5 Factoring Polynomials
1.6 Rational Expressions

Chapter 2: Equations and Inequalities

2.1 The Rectangular Coordinate Systems and Graphs
2.2 Linear Equations in One Variable
2.3 Models and Applications
2.4 Quadratic Equations
2.5 Other Types of Equations
2.6 Inequalities Involving Linear Expressions and Absolute Values

Chapter 3: Functions

3.1 Functions and Function Notation

3.2 Domain and Range
3.3 Rates of Change and Behavior of Graphs
3.4 Composition of Functions
3.5 Transformation of Functions
3.6 Absolute Value Functions
3.7 Inverse Functions

Chapter 4: Polynomial and Rational Functions

4.1 Linear Functions
4.2 Quadratic Functions
4.3 Power Functions and Polynomial Functions
4.4 Graphs of Polynomial Functions
4.5 Dividing Polynomials
4.6 Zeros of Polynomial Functions
4.7 Rational Functions
4.8 Inverses and Radical Functions

Chapter 5. Exponential and Logarithmic Functions

5.1 Exponential Functions
5.2 Graphs of Exponential Functions
5.3 Logarithmic Functions
5.4 Graphs of Logarithmic Functions
5.5 Logarithmic Properties
5.6 Exponential and Logarithmic Equations

SUGGESTED TEXTS:

- College Algebra with Corequisite Support 2e (OpenStax https://openstax.org/details/books/college-algebra-corequisite-support-2e)
- College Algebra, 8th Edition. Robert Blitzer. Pearson
- College Algebra, 7th Edition, James Stewart, Lothar Redlin, and Saleem Watson, Cengage

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