

MAT 102 Intermediate Algebra (Extended)

Department of Mathematics
Southern Connecticut State University

I. Catalog Description

Solutions to linear equations and inequalities, polynomials, quadratic equations, exponential equations, graphing, rational and radical expressions, and functions. Graphing calculator approved by the instructor is required.

II. Purpose

The purpose of this course is to provide students with the algebraic skills and concepts needed for the mathematics general education courses MAT 103, MAT 105, MAT 107, MAT 108 and the mathematics courses MAT 120 and MAT 122.

III. Credit

MAT 102 carries 3 semester hours of university credit. This course does not satisfy the University requirement in Mathematics.

IV. Prerequisite

MAT 095, or eligible for MAT 100 but wishing for a slower-paced course or an appropriate score on the placement exam.

IV. Format

MAT 102 is offered in the lecture-discussion format. This class will meet for 3 and 1/3 contact hours per week spread over 4 days.

V. Technology

A TI-83 Plus or TI-84 Graphing Calculator is required. An online Course Management System will be utilized for doing homework problems.

VI. Course Objectives

Students should be able to:

- (A) Set up and use simple mathematical models. In particular, students should be able to translate "word problems" into corresponding mathematical problems solve and then interpret the results in terms of the conditions of the word problem.

- (B) Examine the formal definition of a function and the various notations used to represent functions. Examine linear equations in one and two variables as well as linear inequalities in one and two variables.
- (C) Recognize and work with linear, absolute value and quadratic functions.
- (D) Recognize and work with rational functions, square root functions, cube root functions and rational exponents. Students should be able to simplify and perform operations on rational and radical expressions.
- (E) Understand the concept of the exponential and logarithmic functions.
- (F) Use graphing calculators to aid in the computations and concepts of the course. Students should know the advantages and disadvantages of using the calculator to produce solutions and should be able to interpret those solutions.
- (G) Solve algebraic equations. Students should be able to solve quadratic equations, equations containing rational expressions and equations containing radical expressions.

VII. Current Text

Hall and Mercer, Beginning and Intermediate Algebra, the Language and Symbolism of Mathematics, 2nd Ed., McGraw-Hill, 2008.

Sections covered :

- Chapter 3 : Sections 3.1 - 3.5 (Review).
- Chapter 4 : Sections 4.1, 4.2 (Review), Sections 4.3-4.5.
- Chapter 7 : Sections 7.1-7.6, Section 7.7 (Optional).
- Chapter 8 : Sections 8.1 - 8.6.
- Chapter 9 : Sections 9.1 - 9.5.
- Chapter 10 : Sections 10.1 - 10.4.

VIII. Outline

- (A) Linear and systems of linear equations in two variables.
- (B) Linear inequalities and system of linear inequalities.
- (C) Functions : linear, absolute value, and quadratic.
- (D) Rational functions.
- (E) Square root and cube root functions and rational exponents.
- (F) Exponential and logarithmic functions.

IX. Other

The common final exam is to be counted as 25 % of the final course grade.

X. Waiver Exam

There is no waiver for MAT 102.