

Saint Leo University School of Arts and Sciences
MAT 003
BASIC ALGEBRA

Course Description:

This course does not satisfy any degree requirements in mathematics or elective credit for an associate's or a bachelor's degree. This course is designed to help students build a foundation for algebra. Topics include basic operations and order of operations with integers, fractions, decimals, percentages, and all real numbers; algebraic expressions including polynomials, solving and graphing linear equations and functions, linear inequalities, basic exponents, and systems of equations. This is a pass/fail course.

Prerequisite:

None

REQUIRED TEXT

The custom book package information which appears on our Saint Leo bookstore order site is as follows:

Blitzer, *MyLab for Introductory Algebra* (8th edition). New York: Pearson Custom. ISBN# 978-0-13-6854425

Note: This custom package contains both the eBook and MyMathLab access. As this is a Direct Digital Access package integrated within the course, no access code is required)

The custom package above was created from the following national text and resources:

1. Blitzer, R.F. (2021). *Introductory algebra for college students* (8th ed.). Boston: Pearson-Prentice Hall. ISBN# 978-0-13-6552017
2. MyMathLab access code card standalone

Learning Outcomes:

Upon completion of the course, you will be able to:

1. Students will be able to describe basic properties of equalities and inequalities and solve linear equations, inequalities, and systems of equations as demonstrated on problem sets, quizzes, and tests.
2. Students will be able to demonstrate the use of the rectangular coordinate system by graphing points, as demonstrated on problem sets, quizzes, and tests.
3. Students will be able to construct the equations of lines and solve applications as demonstrated on problem sets, quizzes, and tests.
4. Students will be able to add, multiply and divide integers, decimals, fractions, percentages, and all real numbers and polynomials and manipulate integer exponents as demonstrated on problem sets, quizzes, and tests.
5. Students will personally develop their mathematical knowledge, problem solving skills, and critical thinking as demonstrated by solving applied word problems and other mathematical problems that are included in the problem sets, quizzes, exams, and other course assignments.

Core Value:

Personal Development: The students will be learning the mathematical skills for solving problems and critical thinking necessary for Personal Development.

Evaluation:

Item	Weight
Tests (7)	28%
Problem Sets (8)	16%
Quizzes (7)	14%
Discussion (8)	12%
Final Exam (1)	30%
Total	100%

Mathematics 003 is a course designed to help students improve basic mathematical skills and to build a foundation for algebra. One of the instructor's main responsibilities is to evaluate students at the end of the semester and to decide whether they are prepared to move on to higher level math courses such as 128.

The course does not satisfy the general education requirement or elective credit for an associate's or a bachelor's degree. Each student will receive a grade of pass "P", or fail "F" for the course. The grade will appear on the transcripts but it will not be counted toward the GPA.

In order to pass the course, student's overall percentage in the course must be 70% or higher.

Problem Sets:

There will be 8 Problem Sets, one for each module. Each problem set will be completed in MyMathLab. There is a link in each module to complete the problem sets. The problem sets are due on Sunday of each module.

Quizzes:

There will be 7 quizzes, one for each module except in Module 8. Each quiz will be completed in MyMathLab. There is a link in each module to complete the quizzes. The quizzes are due on Sunday of each module.

Tests:

There will be 7 tests, one for each module except Module 8. Each test will be completed in MyMathLab. There is a link in each module to complete the tests. The tests are due on Sunday of each module.

Discussions:

There will be 8 discussion questions, one for each module. There is a link in each module to complete the discussion posts. Each discussion question will relate to mathematical topics but allow students to explore the concepts from a problem solving and critical thinking perspective. The initial response to the discussion question must be posted by Thursday night and then two responses to classmates need to be posted by Sunday.

Final Exam:

There is a comprehensive final exam during Module 8. The final exam will determine how well students mastered the various topics covered during the semester. The Final Exam will be completed in MyMathLab. There is a link in Module 8 to complete it. It must be completed by Sunday of Module 8.

Grading Scale:

Grade	Percentage
A	94% to 100%
A-	90% to 93%
B+	87% to 89%
B	84% to 86%
B	80% to 83%
C+	77% to 79%
C	74% to 76%
C-	70% to 73%

D+	67% to 69%
D	60% to 66%
F	Below 60%

Course Schedule:

Module 1 The Real Number System

Objectives When you complete this module, you should be able to:

- ✦ Evaluate algebraic expressions.
- ✦ Translate English phrases to algebraic expressions or equations.
- ✦ Determine whether a number is a solution of an equation.
- ✦ Add, subtract, multiply, divide, reduce, and simplify fractions.
- ✦ Convert between mixed numbers and improper fractions.
- ✦ Define the sets that make real numbers and classify numbers belonging to one or more sets of the real numbers.
- ✦ Graph numbers on real line.
- ✦ Use rules of algebra and properties of addition and multiplication such as the commutative property to simplify algebraic expressions.
- ✦ Use the four basic operations and order of operations to simplify algebraic expressions.

Readings Read sections 1 – 8 of Chapter 1 in our textbook: Introductory Algebra, Blitzer 8th edition.

Assignments

Items to be Completed:	Due No Later Than:
Post an introduction to the class	Thursday 11:59 PM EST/EDT
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 1</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 1 Quiz</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 1 Test</i>	Sunday 11:59 PM EST/EDT

Module 2 Linear Equations in One Variable

Objectives When you complete this module, you should be able to:

- ✦ Identify linear equations in one variable.
- ✦ Decide whether a given number is a solution to the given equation.
- ✦ Use the addition and multiplication properties of equality to solve equations.
- ✦ Solve linear equations containing fractions and decimals.
- ✦ Solve formulas for a variable.
- ✦ Solve applied problems using formulas.
- ✦ Use the percent formula.
- ✦ Solve applied formulas involving percent.

Readings Read sections 1 – 4 of Chapter 2 in our textbook: Introductory Algebra, Blitzer 8th edition.

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 2</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 2 Quiz</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 2 Test</i>	Sunday 11:59 PM EST/EDT

Module 3 Problem Solving and Linear Inequalities

Objectives When you complete this module, you should be able to:

- ✦ Translate word problems into algebraic expressions.
- ✦ Solve word problems using linear equations.
- ✦ Understand properties used to solve linear inequalities.
- ✦ Solve linear inequalities.
- ✦ Graph solutions of linear inequalities.
- ✦ Use interval notation to express the solutions of linear inequalities.
- ✦ Solve problems using linear inequalities.

Readings Read sections 5 and 7 of Chapter 2 in our textbook: Introductory Algebra, Blitzer 8th edition.

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 3</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 3 Quiz</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 3 Test</i>	Sunday 11:59 PM EST/EDT

Module 4 Graphing Linear Equations in Two Variables

Objectives When you complete this module, you should be able to:

- ✦ Plot ordered pairs in the rectangular coordinate system and conversely be able to find coordinates of a point in the rectangular coordinate system.
- ✦ Determine if an ordered pair is a solution of a linear equation in two variables.
- ✦ Find all solutions of a linear equation in two variables and graph the solution set.
- ✦ Determine the intercepts of a line from its graph.
- ✦ Graph a linear equation in two variables using the x and the y intercepts.
- ✦ Identify and graph horizontal and vertical lines.
- ✦ Compute slope of a line.
- ✦ Use slopes to determine whether the given lines are parallel, perpendicular, or neither.
- ✦ Use slopes to calculate rate of change in an applied problem.

Readings Read sections 1 – 3 of Chapter 3 in our textbook: Introductory Algebra, Blitzer 8th edition.

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 4</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 4 Quiz</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 4 Test</i>	Sunday 11:59 PM EST/EDT

Module 5 Slopes and Intercepts of Lines

Objectives When you complete this module, you should be able to:

- ✦ Find the slope and y-intercept form equation of a given line.
- ✦ Use slope and y-intercept to graph a line.
- ✦ Find slope and y-intercept of a line $Ax+By=C$ and then graph the line.
- ✦ Find the point-slope form equation of a given line.

Readings Read sections 4 and 5 of Chapter 3 in our textbook: Introductory Algebra, Blitzer 8th edition.

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 5</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 5 Quiz</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 5 Test</i>	Sunday 11:59 PM EST/EDT

Module 6 Systems of Linear Equations

Objectives When you complete this module, you should be able to:

- ✦ Decide whether an ordered pair is a solution of a linear system.
- ✦ Solve systems of linear equations by graphing.
- ✦ Use Graphing to identify systems with no solution or infinitely many solutions.
- ✦ Solve linear systems and problems by the substitution method.
- ✦ Solve linear systems by the addition method.
- ✦ Determine the most efficient method for solving a linear system.
- ✦ Solve applied problems using linear systems.

Readings Read sections 1 – 4 of Chapter 4 in our textbook: Introductory Algebra, Blitzer 8th edition.

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT

Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 6</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 6 Quiz</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 6 Test</i>	Sunday 11:59 PM EST/EDT

Module 7 Polynomials

Objectives When you complete this module, you should be able to:

- ✦ Use polynomial terminology such as coefficient, exponent, base, degree, etc. to describe polynomials.
- ✦ Add, subtract, multiply polynomials and simplify.
- ✦ Apply the FOIL method to multiply polynomials.
- ✦ Use special products to multiply polynomials.
- ✦ Use polynomial terminology such as coefficient, exponent, base, degree, etc. to describe polynomials in several variables.
- ✦ Add, subtract, multiply polynomials in several variables and simplify.
- ✦ Evaluate polynomials in several variables.
- ✦ Use the laws of exponents to simplify products and quotients of monomials.
- ✦ Convert from decimal notation to scientific notation and vice versa.

Readings Read sections 1 – 5 and 7 of Chapter 5 in our textbook: Introductory Algebra, Blitzer 8th edition.

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 7</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 7 Quiz</i>	Sunday 11:59 PM EST/EDT
Complete <i>Module 7 Test</i>	Sunday 11:59 PM EST/EDT

Module 8 Review of Basic Algebra

Objectives When you complete this module, you should be able to:

- ✦ Review the entire course material

Readings No readings for Module 8

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmate	Sunday 11:59 PM EST/EDT
Complete problem set for <i>Module 8</i>	Sunday 11:59 PM EST/EDT
Complete <i>Final Exam</i>	Sunday 11:59 PM EST/EDT