

# COURSE TOPICS — Math 11100 – Algebra

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**INTRODUCTION:** The topics covered in Math 11100 are shown below (continued on page 2). Although the topics are usually shown as the titles of ebook sections, they do describe in essence the entire variety of topics that are discussed in this course. In some cases the topic may be entirely new to you but in other cases it definitely should not be entirely new to you. As just one example, despite the fact that we “cover” integer exponents in section 4.1 and radical expressions in section 7.1 (i.e., we add to what you already know of these topics), you should already know **exactly** the meaning of an expression such as  $\frac{(-9+\sqrt{16})(-3^2)}{-4-1}$ , which happens to involve integer exponents and radical expressions, as well as at least two types of grouping symbols and the arithmetic operations of addition, subtraction, and negation. Furthermore, and very importantly in this example, you should already know the rules for order of operations, since anyone lacking that specific type of knowledge cannot be trusted to consistently evaluate an expression of the type shown here. Furthermore, the expression shown here cannot represent a positive number in one context and a negative number in another context; it is either a positive number or a negative number, but not positive in one context and negative in another context. This means that you should already be able to completely evaluate and simplify this expression (and because of the small numbers that are used you should be able to do so without the use of a calculator). The NOTE below alludes to at least some of the knowledge that you should have before taking Math 11100.

**Ebook (and Optional Loose Leaf Book):** The chapter and section numbers below refer to the ebook for this course. Use the *Pearson MyLabsPlus (MLP)* link in this course in Canvas to access the ebook.

- MLP/Ebook: *Intermediate Algebra, Custom Ed. for IUPUI*, Lial, Hornsby, McGinnis
- Loose leaf (ISBN 9781323494097): *Intermediate Algebra, Custom Ed. for IUPUI*, Lial, Hornsby, McGinnis

**NOTE:** The ebook includes some prerequisite material for this course, namely, all of Ch. R and sections 1.1 through 1.4 of Ch. 1. You should be proficient at working the problems in those sections (and showing adequate detail in the process) before you register to take Math 11100. Those sections are included in the ebook for review purposes only. The real content of this course starts in section 1.5, as shown below.

**Chapter 1: Linear Equations, Inequalities, and Applications**

- 1.5 Linear Inequalities in One Variable
- 1.6 Set Operations and Compound Inequalities
- 1.7 Absolute Value Equations and Inequalities

**Chapter 2: Linear Equations, Graphs, and Functions** (Note: We omit section 2.4 in the ebook)

- 2.1 Linear Equations in Two Variables
- 2.2 The Slope of a Line
- 2.3 Writing Equations of Lines
- 2.5 Introduction to Relations and Functions
- 2.6 Function Notation and Linear Functions

**Chapter 3: Systems of Linear Equations** (Note: We omit section 3.2 in the ebook)

- 3.1 Systems of Linear Equations in Two Variables
- 3.3 Applications of Systems of Linear Equations

**Chapter 4: Exponents, Polynomials, and Polynomial Functions**

- 4.1 Integer Exponents and Scientific Notation
- 4.2 Adding and Subtracting Polynomials
- 4.3 Polynomial Functions, Graphs, and Composition
- 4.4 Multiplying Polynomials
- 4.5 Dividing Polynomials

- Chapter 5: Factoring**
- 5.1 Greatest Common Factors and Factoring by Grouping
  - 5.2 Factoring Trinomials
  - 5.3 Special Factoring
  - 5.4 A General Approach to Factoring
  - 5.5 Solving Equations by the Zero-Factor Property
- Chapter 6: Rational Expressions and Functions** (Note: We omit section 6.6 in the ebook)
- 6.1 Rational Expressions and Functions; Multiplying and Dividing
  - 6.2 Adding and Subtracting Rational Expressions
  - 6.3 Complex Fractions
  - 6.4 Equations with Rational Expressions and Graphs
  - 6.5 Applications of Rational Expressions
- Chapter 7: Roots, Radicals, and Root Functions**
- 7.1 Radical Expressions and Graphs
  - 7.2 Rational Exponents
  - 7.3 Simplifying Radical Expressions, the Distance Formula, and Circles (omit circles)
  - 7.4 Adding and Subtracting Radical Expressions
  - 7.5 Multiplying and Dividing Radical Expressions
  - 7.6 Solving Equations with Radicals
  - 7.7 Complex Numbers
- Chapter 8: Quadratic Equations, Inequalities, and Functions**
- 8.1 The Square Root Property and Completing the Square
  - 8.2 The Quadratic Formula
  - 8.3 Equations Quadratic in Form
  - 8.4 Formulas and Further Applications
  - 8.5 Graphs of Quadratic Functions
  - 8.6 More about Parabolas and Their Applications
  - 8.7 Polynomial and Rational Inequalities
- Chapter 9: Inverse, Exponential, and Logarithmic Functions**
- 9.1 Inverse Functions
  - 9.2 Exponential Functions
  - 9.3 Logarithmic Functions
  - 9.4 Properties of Logarithms
  - 9.5 Common and Natural Logarithms
  - 9.6 Exponential and Logarithmic Equations; Further Applications