

# MAT\*137 objectives and learning outcomes

## Course Objectives:

1. Understand and effectively use the language of algebra.
2. Develop problem-solving skills and algebraic skills necessary for higher level mathematics courses.
3. Develop critical thinking skills to apply algebraic concepts to real world applications.
4. Use technology to explore and make connections.

## Learning Outcomes: At the end of this course the student will be able to do the following:

### A. Functions —

- Demonstrate understanding of the concept of a function.
- Make connections between symbolic, numeric, and graphic representations of functions.
- Recognize and use function notation.
- Evaluate polynomial, rational, radical, and absolute value functions.
- Determine domains and ranges of functions, expressing these sets in words and algebraically.

### B. Linear Functions —

- Solve real-life problems modeled by linear functions and systems of linear functions.

### C. Quadratic Functions —

- Graph quadratic functions.
- Identify vertex, zeros, and axis of symmetry.
- Factor quadratic expressions using greatest common factor, difference of two squares, and trinomials of form  $ax^2 + bx + c$  where  $a$  or  $c$  is prime.
- Solve quadratic equations by graphing, factoring, square root property, and the quadratic formula.
- Solve real-life problems modeled by quadratic functions.

### D. Polynomial Functions of Degree 3 or Higher —

- Perform operations on polynomial expressions.
- Graph polynomial functions and identify zeros.

### E. Exponential Functions —

- Demonstrate understanding of exponential growth/decay.
- Evaluate exponential functions.
- Graph exponential functions.
- Solve applications involving exponential functions.

### F. Rational and Radical Functions —

- Graph rational functions and radical functions.
- Apply the rules for rational exponents and understand the relationship between rational exponents and root signs.
- Perform operations on basic rational and radical expressions.
- Solve equations involving rational expressions.
- Solve applications involving rational functions.

### G. Absolute Value Functions —

- Graph absolute value functions