

# SYLLABUS

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**Code:** MATH 025

**Title:** ELEMENTARY ALGEBRA

**Institute:** STEM

**Department:** MATHEMATICS

**Course Description:** This course is a review of elementary algebra and requires previous experience in algebra. The course is intended for students who need to take Intermediate Algebra, MATH 151. The topics in MATH 025 include linear, quadratic, polynomial, exponential, rational, and square root expressions; functions; factoring; linear, quadratic, rational and radical equations; linear inequalities; linear systems; and graphing linear and quadratic equations. Problem solving is explored throughout the course. Problems are approached from a variety of perspectives, including graphical, numerical, verbal, and algebraic. A scientific calculator is allowed – the specific model is determined by the department. This is a developmental course in foundational studies and will not be counted towards degree requirements. NOTE: Students taking MATH 025 may not enroll simultaneously in any other math course.

**Prerequisites:** MATH 015 or MATH 012, or satisfactory completion of the college's foundational studies requirement in computation.

**Credits:** 4

**Lecture Hours:** 4

**Lab:** 0

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**REQUIRED TEXTBOOK/MATERIALS:**

**See your instructor addendum for a complete list of required materials for your section.**

**1. Textbooks:**

- “Beginning Algebra” by Marecek and Anthony-Smith, Open Stax e-book, 2017 Rice University.
- “Intermediate Algebra”, Section 3.5 – Functions, by Marecek, Open Stax e-book, 2019 Rice University.

**2. Homework:** Online homework will be completed using the MyOpenMath platform, which is free to students.

**3. Notebook:** You should use a loose-leaf notebook. Use the front of the notebook for class notes and in-class problem solving, and the back of the notebook for homework. A loose-leaf notebook is preferred over a spiral bound notebook since your instructor may wish to collect assignments periodically. Returned assignments can be reinserted into their proper location in a loose-leaf notebook.

**4. Scientific Calculator:** The calculator for this course is the TI-30 or other version with similar features. The use of any other calculator should be discussed with the instructor.

**5. Graph paper:** You should bring graph paper to each class.

**6. Ruler:** You should bring a small ruler to each class.

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## **ADDITIONAL TIME REQUIREMENTS:**

### **OTHER TIME COMMITMENTS:**

- In addition to the regular class hours, you will need to set aside time each week for homework. The weekly time will vary by topic and level of difficulty, but as an estimate, you should expect two homework hours for *each* class hour per week. For example, if your class meets for four hours per week, you should expect to spend about **eight** hours per week on homework.
- If you are having any difficulty with the course material, you may need to allow time to see your instructor during office hours or to get help in the Math Lab.

### **COURSE LEARNING OUTCOMES:**

Upon completion of this course, students will be able to:

- Demonstrate the mathematical skills appropriate to this course.
- Use math skills necessary for college level algebra courses.
- Use algebraic variables, expressions, and equations to analyze and solve application problems.
- Interpret problem solutions in the context of the situation.

**GRADING STANDARD:** There will be three tests, one after each unit. Each test is cumulative and covers material from the beginning of the course. All supporting work must be shown on tests in order for your instructor to properly assess your understanding of the material. Approved scientific calculators may be used on these tests. The tests will be given in class and it is expected that you will be in class to take the test on the day it is given. If you are very ill (verifiable with a doctor's note) or you have some other emergency, you *must* contact your instructor immediately.

**Note:** For testing information in online and hybrid sections, see Instructor Addendum.

**Retesting for Test 1 OR Test 2:** The passing grade in this course is 70 or higher. You have one opportunity for a retest, either for Test 1 or for Test 2, but not both. You may not retest for a grade higher than 70. The decision about retesting should be made in consultation with your instructor. A passing retest grade is recorded as a 70. Before retesting you must meet with your instructor and be prepared to show all your homework and corrections on the test. Your instructor may require additional work and/or a special review session in the Math Lab. Your instructor will determine when you are ready for the retest. The retest must be taken within two weeks of the day the test was given in class, unless your instructor has made different arrangements. The grade on the retest, which will not be recorded as higher than 70, will be the grade used to compute your final average for the course.

## **B. LABS/QUIZZES/HOMEWORK**

There are daily labs in this course. They are done in groups but handed in individually. The labs contain problems that reinforce the concepts and skills learned in class. There are also periodic quizzes and your instructor may also choose to use certain homework assignments for evaluation.

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## GRADING

Each test is graded on the basis of 100 points, the labs/homework are averaged to form your “lab grade”, and the quizzes are averaged to form your “quiz grade.” Your final course average is determined by a weighted average as follows:

Test 1:	20%
Test 2:	25%
Test 3:	30%
Homework/Lab/Quiz Grade:	25%

## FINAL GRADE

Your final grade is determined as follows:

If your final course average is	Your final grade is
90 – 100	A
88 – 89	A-
86 – 87	B+
80 – 85	B
78 – 79	B-
76 – 77	C+
70 – 75	C
Below 70	F

## Incomplete

INC is only given at the discretion of your instructor. This may occur in documented cases of hardship or emergency. In this case, you must meet with your instructor to discuss the work that must be completed to earn a grade in the course.

All work must be completed within 21 days after the end of the term, exclusive of official college closings.

## Withdrawal

You may withdraw from the course, without penalty, up to a date set by the College. If you do not withdraw from the course but stop attending, your grade at the end of the semester will be F.

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## **COURSE CONTENT:** (TEXT SECTION)

**Unit 1:** In this unit, you will review properties of real numbers; simplify and write algebraic expressions; solve linear inequalities; solve linear equations graphically, numerically, and symbolically; read and interpret a graph; and study functions, formulas, slope, intercepts, equations of lines, and systems of linear equations.

**Unit 1 Outcomes:** You will:

- Review properties of real numbers, simplify and write algebraic expressions (1.9)
- Use the addition and multiplication properties of equality to solve linear equations (2.3)
- Solve linear equations by applying the distributive property and a general strategy. Recognize and classify equations. (2.4)
- Solve linear equations with fractions or decimals. (2.5)
- Solve a formula for one variable and evaluate formulas. (2.6)
- Graph linear inequalities on a number line (2.7)
- Write solution sets in interval notation, a number line, and linear inequality with symbols (2.7)
- Solve linear inequalities in one variable, express the solution set in interval notation, and graph the solution set on a number line (2.7)
- Find the domain and range of a relation, determine if the relation is a function, and determine the value of a function (Intermediate Algebra OER, 3.5)
- Build a table and graph to fit a single rule (4.1)
- Read and interpret a graph (4.1)
- Create/use tables to find solutions of linear equations in two variables (4.2)
- Graph linear equations in two variables (3.2)
- Find intercepts of a linear equation by graphing and using tables (4.3)
- Interpret the meaning of the intercepts in an application (4.3)
- Find the equations of horizontal and vertical lines (4.4)
- Find the slope of a line from its graph, from the formula, and from a table (4.4)
- Interpret the slope as a rate in the context of a problem situation (4.5)
- Find a linear equation in slope-intercept form from a graph (4.5)
- Use a graph and a table to find a linear equation in slope-intercept form (4.5)
- Graph a line using the slope-intercept equation (4.5)
- Determine if equations represent parallel lines and find an equation of a parallel line (4.6)
- Study equations of perpendicular lines (4.6)
- Use slope and a point to write the equation of a line in a point-slope form (4.6)
- Use a graph to find the equation of a line in a point-slope form (4.6)
- Find an equation of a line from two points (4.6)
- Use a table to find the slope-intercept form (4.6)
- Interpret the x-intercept and y-intercept in the context of a problem situation (4.6)
- Set up a system of linear equations and solve the system numerically, graphically and algebraically (5.1, 5.2, 5.3)
- Use a system of linear equations to analyze and solve application problems and interpret the results in the context of the problem situation (5.2, 5.3)

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**Unit 2:** In this unit, you will evaluate exponential expressions; add, subtract, multiply, and factor polynomial expressions; write and work with numbers in scientific notation; make use of more properties of exponents; and solve polynomial equations by factoring.

**Unit 2 Outcomes:** You will:

- Evaluate a polynomial (6.1, 6.2)
- Simplify expressions containing zero and positive exponents (6.1, 6.2)
- Add and subtract polynomials in one or more variables (6.2)
- Multiply polynomials and recognize special products of polynomials (6.3, 6.4)
- Use properties of exponents to rewrite exponential expressions (6.5)
- Simplify expressions containing negative exponents (6.7)
- Convert numbers between decimal notation and scientific notation (6.7)
- Factor binomials and polynomials by using the greatest common factor (7.1)
- Factor trinomials of the form  $x^2 + bx + c$  and  $ax^2 + bx + c$  (7.2, 7.3)
- Factor perfect square trinomials, and the difference of two squares (6.4)
- Develop a basic factoring strategy to implement for any polynomial (7.5)
- Create a table to graph a quadratic function. (Handout)
- Find the vertex, axis of symmetry,  $y$ -intercept, and determine whether the graph of a quadratic function opens up or down. (Handout/10.5)
- Solve quadratic equations by factoring and applying the zero-product property (7.6)
- Solve application problems and interpret the results in the context of the problem situation (7.6)
- Solve polynomial equations by factoring (7.6)

**Unit 3:** In this unit, you will simplify rational, square root and radical expressions; perform operations on rational and radical expressions; and solve rational, radical, and quadratic equations.

**Unit 3 Outcomes:** You will:

- State the domain of rational expressions using functions and graphs (Handout)
- Evaluate and simplify rational expressions. Recognize when a rational expression simplifies to 1 or  $-1$  (8.1)
- Multiply and divide rational expressions (8.2)
- Add and subtract rational expressions with a common denominator. Recognize opposite denominators change the operation from addition to subtraction, and the reverse. (8.3)
- Add and subtract rational expressions with different denominators (8.4)
- Solve rational equations with extraneous solutions. (8.6)
- Identify the difference between rational expressions and rational equations (8.6)
- Solve a formula for a variable (8.6)
- State the domain of square root functions. (Handout)
- Match linear, quadratic, rational, and square root graphs to their respective functions. (Handout)
- Simplify square roots with variable expressions. Use the Product and Quotient Properties to simplify square roots. (9.1, 9.2)
- Add, subtract, multiply, and divide radical expressions (9.3, 9.4, 9.5)
- Solve radical equations with extraneous solutions algebraically (9.6)
- Solve applications of radical equations and interpret solutions in the context of the application. (9.6)
- Solve quadratic equations by using the square root property (10.1)

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## **DEPARTMENT POLICIES:**

The Math Department wants you to be successful in this course. Because of this, we have compiled a list of strategies and behaviors.

### **Attendance and class participation**

- If you want to be successful in this course, attend every class and actively participate.
- Come to class on time, and stay for the entire class period. If you are late or leave during class, you will miss important class material and you will also distract your classmates and your instructor. (See the Student Conduct Code)
- Turn off your cell phone during class. You and your classmates need to be free from distractions. (See the Student Conduct Code)
- Bring your calculator to every class.
- Respect your classmates and your instructor. Listen carefully to questions asked and answers given. Treat all questions with respect.
- Participate fully in class. Volunteer answers, work problems, take careful notes, and engage in discussions about the material. Above all, stay on task.
- Do your own work on tests and quizzes. Cheating will not be tolerated. (See the Academic Integrity Code.)

### **Homework**

- Homework is the way you practice the ideas and skills that are introduced in class. To be successful on the tests, you must do the homework. Homework may be collected and homework questions may be included on quizzes or tests. All the homework assignments are in the Homework Assignment and Test Review packet. There is one packet for each unit. Homework may be online (see Required Materials) and may be graded.
- When you do the homework, write down all supporting work. Using the correct process is at least as important as getting the correct answer, so your work and steps are very important.
- Remember to check your answers. They will be in the back of the e-book or in the Homework Assignment and Test Review packet.
- If there are questions you can't get or don't understand, ask about them at the beginning of the next class. If you have trouble with more than a few problems, try starting your homework in the Math Lab, where help is available.

### **Absence**

- If you are sick and an absence is unavoidable, please call or email your instructor. You are still responsible for all material that was covered during your absence. You are expected to read the textbook and do the homework.
- Make time to see your instructor when you return so that you can get any papers you missed.
- Remember that you are expected to be in class for the tests and quizzes.

### **Getting Help**

After you have tried the homework, there are ways to get help:

- Look in your text and your class notes for examples similar to the problems you are finding difficult.
- See your instructor during office hours or make an appointment. Bring the work you have done.

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- Go to the **Math Lab** to get extra help on your homework or simply go and do your homework there. Someone will be there if you get stuck. You don't need an appointment to use the Math Lab.
- Form a **study group** with other class members. Working with other students can be a great way to learn. If you have a group to work with, consider meeting and working together in the Math Lab.
- Your textbook may have a complete solutions manual available in the Math Lab, which can be used in the Math Lab.
- You can use the computers in the computer lab within the Math Lab to do work related to your math course.
- In the Math Lab, you can get help on how to use your calculator.

Visit the [Math Lab website](#) to view hours and other useful information about the Math Lab.

## **COLLEGE POLICIES:**

As an academic institution, Brookdale facilitates the free exchange of ideas, upholds the virtues of civil discourse, and honors diverse perspectives informed by credible sources. Our College values all students and strives for inclusion and safety regardless of a student's disability, age, sex, gender identity, sexual orientation, race, ethnicity, country of origin, immigration status, religious affiliation, political orientation, socioeconomic standing, and veteran status. For additional information, support services, and engagement opportunities, please visit [www.brookdalecc.edu/support](http://www.brookdalecc.edu/support).

For information regarding:

- ◆ Brookdale's Academic Integrity Code
- ◆ Student Conduct Code
- ◆ Student Grade Appeal Process

Please refer to the [BCC STUDENT HANDBOOK](#) AND [BCC CATALOG](#).

## **NOTIFICATION FOR STUDENTS WITH DISABILITIES:**

Brookdale Community College offers reasonable accommodations and/or services to persons with disabilities. Students with disabilities who wish to self-identify must contact the Disabilities Services Office at 732-224-2730 (voice) or 732-842-4211 (TTY) to provide appropriate documentation of the disability, and request specific accommodations or services. If a student qualifies, reasonable accommodations and/or services, which are appropriate for the college level and are recommended in the documentation, can be approved.

## **ADDITIONAL SUPPORT/LABS:**

See the Tutoring Center for information <https://www.brookdalecc.edu/academic-tutoring/tutoring-center/>.

## **MENTAL HEALTH:**

- Mental Health Crisis Support: From a campus phone, dial 5555 or 732-224-2329 from an external line; off-hours calls will be forwarded to BCC police (2222 from a campus phone)
- Psychological Counseling Services: 732-224-2986 (to schedule an appointment during regular hours)

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# **SYLLABUS**

*The syllabus is intended to give student guidance in what may be covered during the semester and will be followed as closely as possible. However, the faculty member reserves the right to modify, supplement, and make changes as the need arises.*