



## Course Syllabus

### **Math 0314 – Algebraic Functions**

**Catalog Description:** The course supports students in developing skills, strategies, and reasoning needed to succeed in mathematics, including communication and appropriate technology. Topics include the study of numeracy and the real number system; algebraic concepts, notation and reasoning; quantitative relationships; mathematical models; and problem solving.

Will not meet graduation requirements.

**Prerequisites:** Placement Score

**Semester Credit Hours:** 3

**Lecture Hours per Week:** 0

**Lab Hours per Week:** 3

**Extended hours:** 0

**Contact Hours per Semester:** 48

**State Approval Code:** 32.0104.51 19

**Class section meeting time:**

**Alternate Operations During Campus Closure:** In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Panola College to move to altered operations. During this time, Panola College may opt to continue delivery of instruction through methods that include, but are not limited to: online learning management system (CANVAS), online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor Panola College's website ([www.panola.edu](http://www.panola.edu)) for instructions about continuing courses remotely, CANVAS for each class for course-specific communication, and Panola College email for important general information.

#### **Core Components and Related College Student Learning Outcomes**

This course counts as part of the academic requirements of the Panola College Core Curriculum and an Associate of Arts or Associate of Science degree.  Yes  No: If no, skip to Instructional Goals.

The items below marked with an X reflect the state-mandated outcomes for this course **IF this is a CORE course:**

- Critical Thinking Skills – to include creative thinking, innovation, inquiry and analysis, evaluation and syntheses of information
  - CT1: Generate and communicate ideas by combining, changing, or reapplying existing information
  - CT2: Gather and assess information relevant to a question
  - CT3: Analyze, evaluate, and synthesize information
- Communication Skills – to include effective development, interpretation, and expression of ideas

- through written, oral, and visual communication
- CS1: Develop, interpret, and express ideas through written communication
  - CS2: Develop, interpret, and express ideas through oral communication
  - CS3: Develop, interpret, and express ideas through visual communication
  - Empirical and Quantitative Skills – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
    - EQS1: Manipulate and analyze numerical data and arrive at an informed conclusion
    - EQS2: Manipulate and analyze observable facts and arrive at an informed conclusion
  - Teamwork – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
    - TW1: Integrate different viewpoints as a member of a team
    - TW2: Work with others to support and accomplish a shared goal
  - Personal Responsibility – to include the ability to connect choices, actions, and consequences to ethical decision-making
    - PR1: Evaluate choices and actions and relate consequences to decision-making
  - Social Responsibility – to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities
    - SR1: Demonstrate intercultural competence
    - SR2: Identify civic responsibility
    - SR3: Engage in regional, national, and global communities

**Instructional Goals and Purposes:**

The purpose of this course is to increase academic proficiency in expression of mathematical solutions, mathematical reasoning, mathematical understanding and support the co-enrolled credit level course.

**Learning Outcomes:**

Upon successful completion of this course, students will:

1. Define, represent, and perform operations on real and complex numbers.
2. Recognize, understand, and analyze features of a function.
3. Recognize and use algebraic (field) properties, concepts, procedures (including factoring), and algorithms to combine, transform, and evaluate absolute value, polynomial, radical, and rational expressions.
4. Identify and solve absolute value, polynomial, radical, and rational equations.
5. Identify and solve absolute value and linear inequalities.
6. Model, interpret and justify mathematical ideas and concepts using multiple representations.
7. Connect and use multiple strands of mathematics in situations and problems, as well as in the study of other disciplines

**Course Content:**

Students in all sections of this course will learn the following content:

The objectives for this course are aligned with the Texas College Readiness Standards as adopted by the Texas Higher Education Coordinating Board.

1. **Numeric Reasoning**
  - a. To perform computations with and to compare real numbers.
  - b. To use estimation to check for errors and reasonableness of solutions.
2. **Algebraic Reasoning**
  - a. To explain and differentiate between expressions and equations using words such as “solve”, “evaluate”, and “simplify”.
  - b. To recognize and use algebraic field properties, concepts, procedures, and algorithms to combine, transform, and evaluate expressions.
  - c. To explain the difference between the solution set of an equation and the solution set of an inequality.
  - d. To recognize and use algebraic field properties, concepts, procedures, and algorithms to solve equations.
  - e. To interpret multiple representations of equations and relationships.
  - f. translate among multiple representations of equations and relationships.
3. **Geometric Reasoning**
  - a. To recognize and apply right triangle relationships.
  - b. To make connections between geometry and algebra.
4. **Measurement Reasoning**
  - a. To find the perimeter and area of two-dimensional figures.
  - b. To determine indirect measurements of figures using Pythagorean Theorem.
5. **Functions**
  - a. To recognize whether a relation is a function.
  - b. To recognize and distinguish between linear and quadratic functions.
  - c. To understand and analyze features of a function.
  - d. To algebraically construct and analyze linear and quadratic functions.
  - e. To apply linear and quadratic function models to real-world situations.
  - f. To develop a linear or quadratic function to model a situation.
6. **Problem Solving and Reasoning**
  - a. To analyze given information, formulate a plan or strategy, determine a solution, justify the solution, and evaluate the problem-solving process.
  - b. To formulate a solution to a real-world situation based on the solution to a mathematical problem.
  - c. To use a function to model a real-world situation.
7. **Communication and Representation**
  - a. To use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.
  - b. To use mathematical language to represent and communicate the mathematical concepts in a problem.
  - c. To use mathematics as a language for reasoning, problem solving, making connections, and generalizing.
  - d. To model and interpret mathematical ideas and concepts using multiple representations.
  - e. To summarize and interpret mathematical information provided orally, visually, or in written form within the given context.
  - f. To communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, graphs, and words.
  - g. To create and use representations to organize, record, and communicate mathematical ideas.
  - h. To explain, display, or justify mathematical ideas and arguments using precise mathematical language in written or oral communications.

**8. Connections**

- a. To connect and use multiple strands of mathematics in situations and problems.
- b. To connect mathematics to the study of other disciplines.
- c. To use multiple representations to demonstrate links between mathematical and real-world situations.
- d. To know and understand the use of mathematics in a variety of careers and professions.

**Methods of Instruction/Course Format/Delivery:**

Faculty may assign both in- and out-of-class activities to evaluate students' knowledge and abilities. Faculty may choose from – but are not limited to -- the following methods attendance, class preparedness and participation. Collaborative learning projects, exams/tests/quizzes, homework, internet, library assignments, readings, research papers, scientific observations, student-teacher conferences, and written assignments.

The Mathematics Department does not accept late work.

**Assessment(s):**

- 1. Exam per Chapter
- 2. Comprehensive Final Exam

**Course Grade:**

<b>Assignment Weights</b>	
Class Participation	10%
Homework/Quiz Average	15%
Exams	55%
Comprehensive Final Exam	20%

**Letter Grades for the Course will be assigned as follows:**

- A: 90 < Average < 100
- B: 80 < Average < 90
- C: 70 < Average < 80
- D: 60 < Average < 70
- F: 00 < Average < 60

**TEXAS SUCCESS INITIATIVE (TSI):** You must have a C or better to complete your TSI requirements or pass the credit level MATH course with a C or better.

**Texts, Materials, and Supplies:**

- Canvas Access
- Scientific Calculator

**Other:**

- Courses conducted via video conferencing may be recorded and shared for instructional purposes by the instructor.
- For current texts and materials, use the following link to access bookstore listings: <http://www.panolacollegestore.com>
- For testing services, use the following link: <http://www.panola.edu/elearning/testing.html>
- If any student in this class has special classroom or testing needs because of a physical learning or emotional condition, please contact the ADA Student Coordinator in Support Services located in the Administration Building or go to <http://www.panola.edu/student-success/disability-support-services/> for more information.
- Withdrawing from a course is the student's responsibility. Students who do not attend class and who do not withdraw will receive the grade earned for the course.
- Student Handbook, *The Pathfinder*: <http://www.panola.edu/student-success/documents/pathfinder.pdf>