



## **Course Syllabus**

### **MATH 0300 – Foundations of Mathematics**

**Catalog Description:** The course supports students in developing skills, strategies, and reasoning needed to succeed in mathematics, including communication and appropriate use of 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: 3**

**Lab Hours per Week: 0**

**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.

#### **Artificial Intelligence (AI) Course Policy:**

There are situations throughout the course where you may be permitted to use artificial intelligence (AI) tools to aid in further understanding of mathematical concepts. However, AI tools may not be used for any graded assignments including but not limited to exams, quizzes, and projects. Use of any AI-generated content in this course without the instructor's consent qualifies as academic dishonesty and violates Panola College's standards of academic integrity.

#### **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, and mathematical understanding.

### **Learning Outcomes: *[from the ACGM catalog]***

After studying all materials and resources presented in the course, the student will be able to:

1. Use appropriate symbolic notation and vocabulary to communicate, interpret, and explain mathematical concepts.
2. Define, represent, and perform operations on real numbers, applying numeric reasoning to investigate and describe quantitative relationships and solve real world problems in a variety of contexts.
3. Use algebraic reasoning to solve problems that require ratios, rates, percentages, and proportions in a variety of contexts using multiple representations.
4. Apply algebraic reasoning to manipulate expressions and equations to solve real world problems.

5. Use graphs, tables, and technology to analyze, interpret, and compare data sets.
6. Construct and use mathematical models in verbal, algebraic, graphical, and tabular form to solve problems from a variety of contexts and to make predictions and decisions.

**Course Content:**

A general description of lecture/discussion topics included in this course are listed in the Learning Outcomes section of this syllabus.

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

**I. Numeric Reasoning**

- a. Number representation and operations
  - i. Compare and order real numbers using mathematical symbols ( $=$ ,  $\neq$ ,  $<$ ,  $>$ ).
  - ii. Understand that numbers can be represented in different ways and convert between the different representations – fractions, mixed numbers, decimals, percentages, scientific notation.
  - iii. Perform Computations with real numbers – including the four operations on integers, fractions, decimals, and percentages, evaluating exponents and square roots, and using order of operations.
- b. Number sense and number concepts
  - i. Use estimation to check for errors and reasonableness of solutions.
  - ii. Interpret the relationships between different representations of numbers.
- c. Systems of measurement
  - i. Select or use appropriate units of measurement

**II. Algebraic Reasoning**

- a. Identifying expressions and equations
  - i. Explain the difference between expressions and equations.
  - ii. Manipulating Expressions
  - iii. Use algebraic properties, concepts, and algorithms to simplify, combine, and evaluate expressions.
- b. Solving linear equations in one variable
  - i. Use the properties of equality to solve equations (one-step, two-step, and multi-step equations).
- c. Linear equations in two variables
  - i. Graph linear equations in the coordinate plane by plotting order pairs.
  - ii. Find x- and y-intercepts, graph by plotting intercepts.
  - iii. Calculate slope of a line using a graph or the slope-formula.
  - iv. Write an equation for a line in slope-intercept form.
  - v. Use a linear equation to model a real-world situation.

**III. Geometric and Spatial Reasoning**

- a. Figures and their properties
- b. Recognize characteristics of two- and three-dimensional figures.
- c. Measurements involving geometry and algebra
- d. Find the perimeter and area of two-dimensional figures.
  - i. Determine the volume of three-dimensional figures.
  - ii. Use appropriate units of measurement.

**IV. Probabilistic Reasoning**

- a. Counting principles
  - i. Determine the nature and the number of elements in a finite sample space.

- b. Computation and interpretation of probabilities
    - i. Compute and interpret the probability of an event and its complement.
    - ii. Compute and interpret the probability of compound events.
- V. Statistical Reasoning**
- a. Describe data
    - i. Classify types of data.
    - ii. Use graphs and charts to visually represent data (pictographs, bar graphs, line graphs, histograms, and stem-and-leaf plots).
    - iii. Read and interpret information from graphs and charts of data.
    - iv. Compute measures of center and basic notions of spread (including mean, median, mode, range and midrange).
  - b. Analyze, interpret, and draw conclusions from data
    - i. Analyze data sets using graphs and summary statistics.
    - ii. Identify and explain misleading uses of data.
- VI. Problem Solving and Reasoning**
- a. Proportional reasoning
    - i. Use proportional reasoning to solve problems that require fractions, ratios, percentages, decimals, and proportions in a variety of contexts using multiple representations.

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

Methods of Instruction/Course Format/Delivery: Methods employed will include Lecture/demonstration, discussion, problem solving, analysis, and reading assignments. Homework will be assigned. Faculty may choose from but are not limited to, the following methods of instruction:

1. Lecture
2. Discussion
3. Internet
4. Video
5. Television
6. Demonstrations
7. Field trips
8. Collaboration
9. Readings

**The Mathematics Department does not accept late work.**

**Assessment(s):**

1. Major Exams
2. Comprehensive Final Exam

**The EdReady Student Path Score will replace the lowest exam grade.** EdReady is an online math readiness system that will give additional support to each student.

<b>Assignment Weights</b>	
1. Class Participation/Attendance	5%
2. Homework/Quiz/Notebook	20%
3. Exams	50%
4. Comprehensive Final Exam	25%

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

A: 90 < Average < 100

B: 80 < Average < 90

TSI Complete

C: 70 < Average < 80

D: 60 < Average < 70

TSI Incomplete

F: 00 < Average < 60

**TEXAS SUCCESS INITIATIVE (TSI):** *You must have a C or better or pass the MATH Section of the TSI Assessment to be considered TSI complete.* Students who pass the MATH Section of the TSI Assessment can choose to withdraw from the course immediately and receive the higher of either their current grade or a C, a W, or they may choose to finish the semester and receive the grade earned based on the grading schedule.

***You must have a C or better to move on from this course!!!***

Note that if you are passing the course at midterm (with a C or better) but do not successfully complete the course with a C or better, you will be considered Co-Requisite Ready and may enroll in a 1300 level Mathematics course with a co-requisite support in the next semester.

**Texts, Materials, and Supplies:**

**The text and resources for this course are provided by the NROC Developmental Mathematics Program. Panola College is a member of NROC; use of this program is free to the students.**

**Other materials and supplies**

- Canvas Access
- Other materials as assigned by the instructor.

**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: <https://www.panolacollegestore.com>
- For testing services, use the following link: <https://www.panola.edu/student-services/student-support/academic-testing-center>
- 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 Charles C. Matthews Student Center or go to <https://www.panola.edu/student-services/student-support/disability-support-services> for more information.
- Panola College welcomes pregnant and parenting students as a part of the student body. This institution is committed to providing support and adaptations for a successful educational experience for pregnant and parenting students. Students experiencing a need for accommodations related to pregnancy or parenting will find a Pregnancy and Parenting Accommodations Request form in *The Pathfinder* or may request the form from the course instructor.
- 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*: <https://www.panola.edu/> (located at the bottom under students)