GAVILAN COLLEGE

5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: MATH 225   DIVISION: 20   ALSO LISTED AS:

TERM EFFECTIVE: Summer 2026   CURRICULUM APPROVAL DATE: 11/11/2025

SHORT TITLE: PATHWAYS TO CALCULUS SUPPORT

LONG TITLE: Pathways to Calculus Support

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours
2	18	Lecture: 2		36
		Lab: 0		0
		Other: 0		0
		Total: 2		36

Out of Class Hrs:	72.00
Total Learning Hrs:	108.00

COURSE DESCRIPTION:

This course reviews the core skills, competencies, and concepts needed to prepare for MATH 25: Pathways to Calculus. Intended for STEM students who are concurrently enrolled in MATH 25: Pathways to Calculus at Gavilan College. Topics include: a review of computational skills developed in intermediate algebra, factoring, operations on rational and radical expressions, absolute value equations and inequalities, exponential and logarithmic expressions and equations, and an in-depth focus on functions including composition, inverses and graphs. This course is Pass/No Pass only. PREREQUISITE: Appropriate placement. COREQUISITE: MATH 25.

COREQUISITES:
    MATH 25

CREDIT STATUS: S - Support course - Credit

GRADING MODES
    P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

     02 - Lecture and/or discussion

     05 - Hybrid

     71 - Dist. Ed Internet Simultaneous

     72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Students will demonstrate the ability to apply foundational algebraic concepts, such as solving equations, manipulating functions, and working with various expressions such as radical, quadratic, exponential, logarithmic, or trigonometric, to support their understanding of precalculus topics.

COURSE OBJECTIVES:

By the end of this course, a student should:

1. Explore topics related to developing effective learning skills.

2. Graph, analyze, and transform linear, quadratic, piecewise, absolute value, power, and radical functions, and solve and apply related equations and inequalities.

3. Recognize the relationship between functions and their inverses graphically and algebraically.

4. Solve application problems using linear, quadratic, piecewise, power, and radical functions and model real world applications.

5. Describe and compute rates of change.

6. Discuss mathematical problems and write solutions in accurate mathematical language and notation.

7. Interpret mathematical solutions.

8. Perform arithmetic operations between polynomials.

9. Use factoring as a problem-solving technique.

COURSE CONTENT:

Curriculum Approval Date: 11/11/2025

LEARNING SKILLS

Explore topics related to developing effective learning skills

1. Learn study skills

i. Organizational skills

ii. Time management

iii. Test preparation

iv. Test-taking skills

2. Self-assess using performance criteria to judge and improve one's own work

i. Analyze and correct errors on one's exam

ii. Self-assess one's understanding of specific mathematical concepts

iii. Develop and execute a plan to deepen understanding

3. Identify, utilize, and evaluate the effectiveness of resources in improving one's own learning, such as study groups, computer resources, lab resources, and tutoring resources

SIMPLIFYING EXPRESSIONS

Operations on polynomials

Factoring algebraic expressions using a combination of the greatest common factor, difference of two squares, sum or difference of two cubes, trinomial factoring, and grouping.

Solving equations and problems using factoring techniques.

Rules of integer and fractional exponents.

Synthetic Division of polynomials.

FUNCTIONS

Evaluating using numerical and algebraic values.

Identifying domain (inputs) and range (outputs) graphically.

Functional notation in a variety of application problems.

Equations and visual relationships for the inverses of linear, exponential, and logarithmic functions.

Function tests by looking at a graph, table, or equation.

Algebra of functions, including composition.

One-to-one functions graphically (optional).

LINEAR FUNCTIONS, EQUATIONS, AND INEQUALITIES

Equation of a linear function given two ordered pairs, two data points, or a linear graph. Functional answer forms.

Compound linear inequalities joined by "and" or "or", and of the form $c < ax + b < d$. Algebraic, graphical, and interval notation for expressing inequalities.

Equation of a linear function given the slope and a point on the line.

Slope as a rate of change using appropriate units.

Linear inequalities in two variables.

Absolute value equations or inequalities.

Equation of a linear function given a point and a line perpendicular or parallel to the linear function.

Literal equations.

QUADRATIC EQUATIONS AND FUNCTIONS

x- and y-intercepts and vertex of quadratic functions.

Quadratic formula, approximating irrational solutions, and writing complex solutions in a+bi form.

Quadratic models, maximum or minimum values, intercepts.

Application problems.

Solving quadratic inequalities, interval notation.

COURSE CONTENT(CONTINUED):

RATIONAL EXPRESSIONS AND EQUATIONS

Operations on rational expressions.

Simplifying complex fractions.

Rational equations, checking for extraneous solutions.

Application problems involving rational expressions.

Rational inequalities (optional).

RADICAL EQUATIONS AND EXPRESSIONS

Solving radical equations, including those that produce a second-degree equation, checking for extraneous solutions.

Rational exponents and their relationship to radical form.

Simplifying radical expressions with emphasis on cube roots and higher.

Rationalizing numerator or denominator of radical expressions.

Operations on radical expressions.

Application problems involving radicals.

EXPONENTIAL AND LOGARITHMIC EQUATIONS AND EXPRESSIONS

Solving basic exponential and logarithmic equations.

Evaluating basic logarithmic expressions and converting between logarithmic and exponential form.

Exponential equation that requires the use of logarithms.

Logarithmic equation requiring properties of logarithms to condense, base e (ln x) or base 10 (log x) logarithms.

Solving for specific variables in exponential and logarithmic functions or relations.

Graphing basic exponential or logarithmic functions.

Graphical relationship between exponential and logarithmic functions.

Application problems involving exponential or logarithmic models.

Change-of-base formula.

Natural growth and decay models.

SYSTEMS OF EQUATIONS AND INEQUALITIES

Linear and nonlinear systems of equations.

3x3 system of equations (optional).

Graphing 2x2 system of linear inequalities.

Application problems in two or three variables.

CONIC SECTIONS

Graphing a circle by plotting the center and using the radius.

Distance between two points.

Midpoint between two points.

ADVANCED ALGEBRA SKILLS

Factoring expressions with fractional and negative exponents

Completing the square in various contexts

Solving absolute value equations and inequalities

METHODS OF INSTRUCTION:

Instruction will follow a standard lecture/discussion format. Extensive homework will be assigned in order to assure mastery of the concepts covered in class. Students will also be required to utilize technology to enhance their understanding of the material. Students will be given opportunities to work together on problems given in class and group projects.

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours 72

Assignment Description

Regularly assigned homework that requires students to analyze and study pertinent text material, solved examples and lecture notes.

Regularly assigned homework that requires students to apply the principles and skills covered in class by solving related problems.

Projects which require students to explain, apply, and explore concepts taught in class.

METHODS OF EVALUATION:

Problem-solving assignments

Evaluation Percent 25

Evaluation Description

Homework, class work, quizzes

Objective examinations

Evaluation Percent 50

Evaluation Description

Written exams

Other methods of evaluation

Evaluation Percent 25

Evaluation Description

Projects, discussions, presentations

REPRESENTATIVE TEXTBOOKS:

Precalculus: Concepts Through Functions, A Right Triangle Approach to Trigonometry, 5th edition, Sullivan & Sullivan, Pearson, 2022 or a comparable textbook/material.
ISBN: ISBN-13: 9780137978083
12 Grade Verified by: Microsoft Word

ARTICULATION and CERTIFICATE INFORMATION

CSU TRANSFER:

Not Transferable

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education: N

Program Status: 1 Program Applicable

Special Class Status: N

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: E

Course Control Number: CCC000655326

Sports/Physical Education Course: N

Taxonomy of Program: 170100

CIP: 270101