GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: MATH 15 DIVISION: 20 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2023

SHORT TITLE: COLLEGE ALGEBRA

LONG TITLE: College Algebra

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours
4	18	Lecture:	4	72
		Lab:	0	0
		Other:	0	0
		Total:	4	72

Out of Class Hrs: 144.00
Total Learning Hrs: 216.00

COURSE DESCRIPTION:

Math 15 will provide important skills in algebraic manipulation, interpretation, and problem solving at the college level. Topics will include: functions and graphs, equations and inequalities for linear and quadratic functions, polynomial, rational, radical, absolute value, inverse, exponential, and logarithmic functions, systems of equations, matrices and determinants, theory of polynomial equations. (C-ID: MATH 150) PREREQUISITE: MATH 240 or Intermediate Algebra or equivalent skills or appropriate placement with a grade of 'C' or better.

PREREQUISITES:

Completion of MATH 242, as UG, with a grade of C or better.
OR
Completion of MATH 240, as UG, with a grade of C or better.
OR
Completion of MATH 233, as UG, with a grade of C or better.
OR
(Completion of MATH 233A, as UG, with a grade of C or better.
AND Completion of MATH 233B, as UG, with a grade of C or better.)

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade

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. Demonstrate algebraic literacy at the college level.
2. Analyze and investigate properties and features of polynomial, absolute value, radical, rational, exponential, and logarithmic functions and graphs.
3. Create, analyze, and solve mathematical models describing real life applications.

COURSE OBJECTIVES:

By the end of this course, a student should:

1. Evaluate functions, define their domain and range, analyze function properties: even/odd, one-to-one, inverse, increasing/decreasing, relative and absolute max/min.
2. Graph basic functions and perform their transformations: translations, reflections, stretches, and compressions.
3. Perform operations on functions, including composition.
4. Graph and evaluate piece-wise defined functions.
5. Construct and analyze functions describing real life applications.
6. Solve linear and quadratic equations and inequalities in one variable.
7. Analyze properties and graph quadratic functions. Find vertices, intercepts, axis of symmetry.
8. Build linear and quadratic models from verbal descriptions and data.
9. Solve absolute value equations and inequalities.
10. Determine real and complex zeroes of polynomial functions using reminder and factor theorems, rational zero theorem, and the fundamental theorem of algebra.
11. Analyze properties of polynomial graphs: symmetry tests, behavior at the intercepts, end behavior, and turning points.
12. Solve polynomial inequalities using sign charts and graphs.
13. Construct polynomial models from data.
14. Build graphs and analyze properties of rational functions: domain, vertical, horizontal, and oblique asymptotes.
15. Solve applied problems involving rational functions.
16. Solve rational inequalities using sign charts and graphs.
17. Graph exponential and logarithmic functions and analyze their properties.
18. Solve exponential and logarithmic equations.
19. Use exponential and logarithmic equations to build financial and exponential growth/decay models.
20. Solve systems of linear equations using using Gaussian elimination, matrices and determinants.

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

12 hours

Content: Perform operations on real numbers, complex numbers, polynomial and rational expressions, exponents and radicals.

12 Hours

Content: Introductions to functions, domain, range. Graphs of functions. Algebra of functions. Inverse functions.

12 hours

Content: Solving linear and quadratic equations and inequalities.

4 Hours

Content: Absolute Value Equations and Inequalities

HOURS: 8

Content: Polynomial and Rational Functions

HOURS: 8

Content: Exponential and Logarithmic functions

HOURS: 8

Content: Systems of Equations

6 Hours

Content: Review for the Final Exam.

2 Hours

Final Exam

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 be given opportunities to work together on problems given in class and group projects.

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours 144

Assignment Description

20 hours: Reading assigned text book section, reviewing textbook examples and class notes

100 hours: Doing assigned problems; group projects

20 hours: Studying for a test, reviewing problem solving techniques

4 hours: Online discussions

METHODS OF EVALUATION:

Evaluation Percent 15

Evaluation Description

Homework; Quizzes

Evaluation Percent 80

Evaluation Description

In-class written exams.

Evaluation Percent 5

Evaluation Description

Lab Reports; Projects; Research Papers; Discussions

REPRESENTATIVE TEXTBOOKS:
College Algebra. 11th edition, Sullivan, Pearson, 2019 or a comparable textbook/material.
ISBN: ISBN-13: 978-0135163047, ISBN-10: 01351630487
12 Grade Verified by: Ken Wagman

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:
GAV B4, effective 202370
CSU GE:
IGETC:
CSU TRANSFER:
Transferable CSU, effective 202370
UC TRANSFER:
Transferable UC, effective 202370

SUPPLEMENTAL DATA:
Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education: N
Program Status: 2 Stand-alone
Special Class Status: N
CAN:
CAN Sequence:
CSU Crosswalk Course Department: MATH
CSU Crosswalk Course Number: 150
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: E
Maximum Hours:
Minimum Hours:
Course Control Number: CCC000640308
Sports/Physical Education Course: N
Taxonomy of Program: 170100