GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: MATH 8A DIVISION: 10 ALSO LISTED AS: MATH 8

TERM EFFECTIVE: Spring 2021 CURRICULUM APPROVAL DATE: 11/10/2020

SHORT TITLE: FIRST HALF PRECALCULUS

LONG TITLE: First Half of Precalculus

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 8A prepares the student for the study of calculus by by providing important skills in algebraic interpretation, and problem solving at the college level. Topics will include basic algebraic concepts, complex numbers, equations and inequalities of the first and second degree, functions, and graphs, linear and quadratic equations, polynomial functions, exponential and logarithmic functions, systems of equations, and matrices. PREREQUISITE: Mathematics 240 with a grade of 'C' or better or skills equivalent to those in an Intermediate Algebra course or appropriate placement.

PREREQUISITES:

Completion of MATH 240, as UG, with a grade of C or better.
OR
Score of 33 on Intermediate Algebra
OR
Score of 13 on Pre-Calculus
OR
Score of 2800 on Accuplacer Math
OR
Score of 2600 on MM CCCApply Math
OR
Score of 2600 on MM Placement Tool Math

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. Solve a wide variety of equations and inequalities including absolute value, radical, rational, exponential, logarithmic and polynomial.
2. Identify and perform transformations on the graphs of elementary (radical, absolute value, etc.), polynomial (linear, quadratic, cubic), rational, exponential, and logarithmic functions.
3. Solve systems of equations and inequalities using graphing, elimination, substitution techniques, matrix algebra, and determinants.
4. Explain the concept of a function, perform the arithmetic operations of functions, identify the domain of a function, and analyze graphs of functions.
5. Recognize the relationship between inverse functions graphically and through composition.
6. Recognize functional patterns in data and apply functions to model real-world applications.
7. Graph polynomial functions and characterize the real and complex zeros of polynomials.
8. Locate the asymptotes and zeros of rational functions analytically and graph a rational function.

COURSE CONTENT:

Curriculum Approval Date: 11/10/2020

HOURS: 14

Equations, Inequalities and Modeling

Performance Objectives: Students will review solving and graphing linear equations in one and two variables,

quadratic equations, absolute value equations and inequalities, radical equations, and rational equations.

Students will perform algebraic manipulations on expressions encountered in a first semester calculus course.

Students will use a calculator to construct scatter diagrams and perform linear and quadratic regressions.

HOURS: 16

Functions and Graphs

Performance Objectives: Students will study functions and their graphs. They will investigate function notation,

domain and range, transformations and symmetry, operations with functions including composition, inverse

functions, even/odd functions, and piecewise functions. Students will perform transformations on the graphs of

elementary functions (radical, absolute value, etc.). Students will construct mathematical models.

HOURS: 16

Polynomial and Rational Functions

Performance Objectives: Students will analyze and learn to graph linear, quadratic, polynomial and rational

functions. Students will identify end behavior, asymptotic behavior, intercepts, and vertices.

They will characterize real and complex zeros of polynomials and apply the Fundamental Theorem of Algebra.

Students will perform transformations on the graphs of polynomial and rational functions. They will solve

polynomial and rational inequalities using sign charts and graphs. Students will construct mathematical models.

HOURS: 16

Exponential and Logarithmic Functions

Performance Objectives: Students will study and analyze exponential functions. Emphasis will be placed on

the number e, and on using exponential functions in the modeling of growth and decay. Students will study

logarithms learning their uses and applications. Students will learn to recognize the distinguishing characteristics

of exponential functions and will employ regression analysis to generate exponential functions from appropriate

raw data. Students will perform transformations on the graphs of exponential and logarithmic functions. They

will solve exponential and logarithmic equations.

HOURS: 8

Systems of Equations and Inequalities

Performance Objectives: Students will investigate methods for solving linear systems of equations in two and

three variables, and nonlinear systems. Students will investigate methods for solving linear systems using

matrices. They will also learn partial fraction decomposition, systems of inequalities in two variables, and linear

programming.

HOURS: 2

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 also be required to utilize technology, both calculators and computer software, 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: 144

Assignment Description:

1. Analyze and study pertinent text material, solved examples and lecture notes.
2. Apply principles and skills covered in class by solving regularly-assigned homework problems.
3. Regularly synthesize course materials in preparation for exams.
4. Projects to apply concepts learned in class

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 10.00 %

Out-of-class projects.

Problem-solving assignments

Percent of total grade: 10.00 %

Homework, quizzes.

Objective examinations

Percent of total grade: 80.00 %

In-class written exams.

REPRESENTATIVE TEXTBOOKS:

Sullivan & Sullivan. Precalculus: Concepts Through Functions, A Unit Circle Approach to Trigonometry, 4th edition. Pearson,2018.

ISBN: ISBN-10: 0134686977 ISBN-13: 978-0134686974

Reading Level of Text, Grade: 12 Verified by: Jennifer Nari

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

GAV B4

GAV Area 2 = Math Con & Q Reas

CSU GE:

CSU B4

IGETC:

IGETC 2A

CSU TRANSFER:

Transferable CSU

UC TRANSFER:

Transferable UC

SUPPLEMENTAL DATA:

Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
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: CCC000166253
Sports/Physical Education Course: N
Taxonomy of Program: 170100