GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

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

TERM EFFECTIVE: Summer 2020 CURRICULUM APPROVAL DATE: 05/12/2020

SHORT TITLE: SECOND HALF PRECALCULUS

LONG TITLE: Second 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

COURSE DESCRIPTION:

Math 8B prepares students for the study of calculus by providing important skills in algebraic manipulation, interpretation, and problem solving at the college level. Topics will include trigonometric functions, identities, inverse trigonometric functions, and equations; applications of trigonometry, vectors, complex numbers, polar and parametric equations; sequences, series, and mathematical induction; conic sections. PREREQUISITE: Mathematics 8A with a grade of 'C' or better.

PREREQUISITES:

Completion of MATH 8A, 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
72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Find the trigonometric values of any angle or real number and the inverse trigonometric values of real numbers.

2. Graph the basic trigonometric functions and apply changes in period, phase, and amplitude to generate new graphs. Graph inverse trigonometric functions.

3. Solve trigonometric equations, triangles, and applications, including applying the Law of Sines and the Law of Cosines.

4. Manipulate trigonometric expressions and verify trigonometric identities.

5. Calculate powers and roots of complex numbers using DeMoivre's Theorem.

6. Model physical problems using vectors. Decompose vectors into components, add and subtract vectors, multiply vectors using the dot and cross products.

7. Convert between polar and rectangular coordinates. Graph polar and parametric equations.

8. Identify, manipulate, graph, and apply conic sections.

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

Curriculum Approval Date: 05/12/2020

HOURS: 18

Trigonometric Functions

Performance Objectives: Students will learn the concepts of angle measure, radian measure, and the unit circle.

Students will learn the definitions of the six trigonometric functions according to the right triangle, the unit circle, and the rectangular coordinate system.

They will examine sine and cosine functions and become proficient at graphing these functions under transformation, including changes in period, amplitude, and phase shift. Students will investigate the other trigonometric functions and their graphs, including changes in period, amplitude, phase shift, and asymptotes.

They will also learn about inverse trigonometric functions, the composition of inverse trigonometric functions, identities involving inverse trigonometric functions, graphs of inverse trigonometric functions.

Students will apply right triangle trigonometry to problem solving.

Out-of-Class Assignments: Students will complete homework assignments which require them to explain, apply,

and explore concepts taught in class.

Students will complete a project which demonstrates their ability to utilize right triangle trigonometry in a real world application.

HOURS: 18

Trigonometric Identities and Conditional Equations

Performance Objectives: Students learn about the basic trigonometric identities. They will utilize the basic identities to verify identities. Students will study other identities including sum and difference, double-angle and half-angle, and product and sum identities. They will investigate methods for simplifying trigonometric expressions and solving trigonometric equations.

Out-of-Class Assignments: Students will complete homework assignments which require them to explain, apply, and explore concepts taught in class.

Students will complete a project which investigates the relationship between a trigonometric identity and its geometric interpretation.

HOURS: 18

Applications of Trigonometry

Performance Objectives: Students will study the Law of Sines and the Law of Cosines and their applications to problem solving. Students will investigate the trigonometric form of complex numbers and use DeMoivre's Theorem to find nth roots of complex numbers. They will analyze polar and parametric equations and become proficient in graphing functions of these forms.

Out-of-Class Assignments: Students will complete homework assignments which require them to explain, apply, and explore concepts taught in class.

Students will complete a project which utilizes trigonometry to optimize a physical situation.

HOURS: 4

Vectors

Students will investigate vectors and their applications, including vector representation (a quantity with magnitude and direction) in the form <a,b> and ai+bj. They will perform algebraic operations on vectors including addition, subtraction, and scalar multiplication. Students will calculate the dot product and cross product.

Out-of-Class Assignments: Students will complete homework assignments which require them to explain, apply, and explore the concepts taught in class.

HOURS: 8

Analytic Geometry, Conic Sections

Performance Objectives: Derive basic results from analytic geometry including distance and midpoint formulas and equations of lines and circles. Student will learn to graph parabolas, ellipses, circles, and hyperbolas.

Out-Of-Class Assignments: Students will complete homework assignments which require them to explain, apply and explore concepts taught in class.

HOURS: 4

Sequences, Series, and Mathematical Induction.

Performance Objectives: Students will investigate and analyze mathematical sequences and series, and utilize these concepts to solve applications. Students will also study proof by mathematical induction.

HOURS: 2

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 %

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, effective 200430

CSU GE:

CSU B4, effective 200430

IGETC:

IGETC 2A, effective 200430

CSU TRANSFER:

Transferable CSU, effective 200430

UC TRANSFER:

Transferable UC, effective 200430

SUPPLEMENTAL DATA:

Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
Program Status: 1 Program Applicable
Special Class Status: N
CAN:
CAN Sequence:
CSU Crosswalk Course Department: MATH
CSU Crosswalk Course Number: 8B
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: CCC000230541
Sports/Physical Education Course: N
Taxonomy of Program: 170100