MATH C170: PRECALCULUS

Item	Value
Top Code	170100 - Mathematics, General
Units	5 Total Units
Hours	90 Total Hours (Lecture Hours 90)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Local General Education (GE)	• Area 2 Mathematical Concepts and Quantitative Reasoning (CA3)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 2A Math Concepts (2A)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 2A Math Concepts (2A)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B4 Math/Quant.Reasoning (B4)

Course Description

Topics include algebra review, complex numbers, sequences and series, polynomial, rational, exponential, logarithmic, and trigonometric and inverse functions, vectors, analytic geometry, linear systems, matrices, and polar coordinates. This course is designed for those students planning to study calculus 1. PREREQUISITE: Successful completion, with a grade of C or better, of Intermediate Algebra or equivalent or a high school class of Integrated Math 3. Transfer Credit: CSU; UC: Credit Limitation: MATH C115 and MATH C170 combined: maximum credit, five semester or seven and one-half quarter units.

Course Level Student Learning Outcome(s)

1. Graph polynomial and rational functions.
2. Obtain and simplify the difference quotient for a given function.
3. Solve trigonometric equations.

Course Objectives

- 1. Graph functions and relations in rectangular coordinates and polar coordinates.
- 2. Synthesize results from the graphs and/or equations of functions and relations.
- 3. Apply transformations to the graphs of functions and relations.
- 4. Recognize the relationship between functions and their inverses graphically and algebraically.
- 5. Solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities.
- 6. Solve systems of equations and inequalities.
- 7. Apply functions to model real world applications.
- 8. Identify special triangles and their related angle and side measures.
- 9. Evaluate the trigonometric function of an angle given in degree and radian measure.
- 10. Manipulate and simplify a trigonometric expression.
- 11. Solve trigonometric equations, triangles, and applications.
- 12. Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs.
- 13. Prove trigonometric identities.

Lecture Content

Functions including linear, polynomial, rational, radical, exponential, absolute value, logarithmic, trigonometric; definitions, evaluation, domain and range Inverses of functions Algebra of functions Graphs of functions including asymptotic behavior, intercepts, and vertices Transformations of quadratic, absolute value, radical, rational, logarithmic, exponential functions Equations including rational, linear, radical, polynomial, exponential, trigonometric, logarithmic, and absolute value Linear, nonlinear, and absolute value inequalitie Systems of equations and inequalitie Characterization of real and complex zeros of polynomials Unit circle and right triangle trigonometry Trigonometric and inverse trigonometric identities and formulas Graphing trigonometric functions: period, amplitude, phase shift, inverse trigonometric functions Polar coordinates

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

All the teaching methods include computer, math software, graphing calculators, videos, and Powerpoint Presentations.

Reading Assignments

Reading in a textbook or supplementary OER source

Writing Assignments

Homework exercises, quizzes, comprehensive Midterm and Final exams

Out-of-class Assignments

Out-of-Class assignments include homework and quizzes.

Demonstration of Critical Thinking

Apply mathematics concepts to solve real world application problems, explain the reasoning, and present the results.

Required Writing, Problem Solving, Skills Demonstration

Quizzes, examinations, homework or projects where students demonstrate their mastery of the learning objectives and their ability to devise, organize and present complete solutions to problems.Students will be able to explain solutions and justify reasoning verbally or in writing and may be included in classroom discussions, quizzes, Midterm Examination, Final Examination, and Projects.

Eligible Disciplines

Mathematics: Master's degree in mathematics or applied mathematics OR bachelor's degree in either of the above AND master's degree in

statistics, physics, or mathematics education OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Sullivan and Sullivan. Precalculus - Concepts Through Functions, A Unit Circle Approach, 5th ed. Pearson, 2024 2. Required Abramson, J.. Precalculus, 2nd ed. Arizona State University, 2024

Other Resources

1. Coastline Library 2. Digital Video Tutor 3. MyMathLab access code 4. Student Solutions Manual