MATH 25 Course Outline as of Summer 2019

CATALOG INFORMATION

Dept and Nbr: MATH 25   Title: PRECALCULUS ALGEBRA
Full Title: Precalculus Algebra
Last Reviewed: 2/8/2021

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00   Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable
Grading: Grade Only
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly:

Catalog Description:
College algebra topics, including equations, expressions, functions, inverse functions, and graphs. Also includes parametric equations, complex numbers, sequences and series.

Prerequisites/Corequisites:
Completion of MATH 156 or MATH 154 or MATH 155 or appropriate placement based on AB 705 mandates

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: College algebra topics, including equations, expressions, functions, inverse functions, and graphs. Also includes parametric equations, complex numbers, sequences and series. (Grade Only)
Prerequisites/Corequisites: Completion of MATH 156 or MATH 154 or MATH 155 or appropriate placement based on AB 705 mandates
Recommended:

Limits on Enrollment:
Transfer Credit: CSU;UC.
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	B	Communication and Analytical Thinking	Fall 2006	
	MC	Math Competency	Fall 1981	
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B4	Math/Quantitative Reasoning	Fall 2006	
IGETC:	**Transfer Area**		Effective:	Inactive:
	2A	Mathematical Concepts & Quantitative Reasoning	Fall 2006	

CSU Transfer: Transferable   Effective: Fall 2006   Inactive:

UC Transfer: Transferable   Effective: Fall 2006   Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Perform advanced operations with functions (polynomial, rational, absolute value, radical, exponential, and logarithmic), understand the characteristics and graphs of these functions, and apply knowledge to modeling problems.
2. Define and graph inverse functions and parametric equations.
3. Solve selected algebraic equations symbolically over the complex numbers, and solve polynomial, rational, absolute value, radical, exponential, and logarithmic equations graphically and symbolically over the real numbers.

Objectives:
During this course, students will:
1. Perform advanced operations with functions (using symbolic, graphical, and numerical representations) and apply knowledge to application and modeling problems.
2. Define and graph inverse functions.
3. Identify and interpret characteristics of functions (including intercepts, turning points, extreme values, intervals of positive/negative, increasing/decreasing value, transformations, symmetry, asymptotes, and holes).
4. Graph polynomial, rational, absolute value, radical, exponential, and logarithmic functions.
5. Solve equations symbolically and graphically (involving polynomial, rational, absolute value, radical, exponential, and logarithmic functions) over the real numbers; and, as appropriate, the complex numbers.
6. Graph piecewise-defined functions and parametric equations.
7. Perform operations with complex numbers in rectangular form.

Topics and Scope:

I. Equations and Inequalities
   A. Graphical and algebraic solutions to radical and quadratic form equations
   B. Graphical and algebraic solutions to absolute value equations and inequalities
   C. Parametric equations
II. Complex Numbers
   A. Definition
   B. Operations
III. Analysis of Functions and Their Graphs
   A. Definition
   B. Notation
   C. Domain
   D. Range
   E. Operations, including difference quotients and composition of functions
   F. Catalog of functions
   G. Symmetry (even and odd functions)
   H. Transformations of graphs (shifts, scaling, reflections)
   I. Modeling
IV. Polynomial and Rational Functions
   A. Linear, quadratic, polynomial functions of higher degree and their graphs
   B. Long division of polynomials
   C. Graphs of rational functions
   D. Asymptotes and holes
   E. Introduction to limit concepts and notation
   F. Solutions of polynomial and rational equations and inequalities, using real numbers and
      complex numbers as appropriate
V. Inverse, Exponential and Logarithmic Functions
   A. Definitions
   B. Properties
   C. Graphs
   D. Equations
   E. Applications
VI. Sequences and Series
   A. Introduction to finite and infinite sequence and series (sigma) notation
   B. Finite and infinite geometric sequences and series
   C. Summation of powers of integers
   D. Binomial Expansion
      1. Factorial notation
      2. Pascal's Triangle and/or binomial coefficients

Assignment:

1. Reading outside of class (0-60 pages per week)
2. Problem sets (1-8 per week)
3. Quizzes (0-4 per week)
4. Projects (0-10)
5. Exams (2-6)
6. Final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing
0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Problem sets

Problem solving
5 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations
0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Exams and quizzes

Exams
70 - 95%

Other: Includes any assessment tools that do not logically fit into the above categories.

Projects

Other Category
0 - 10%

Representative Textbooks and Materials:
College Algebra Enhanced with Graphing Utilities. 7th ed. Sullivan, Michael and Sullivan III, Michael. Pearson. 2016

College Algebra. 7th ed. Stewart, James and Redlin, Lothar and Watson, Saleem. Cengage L. 2015

Precalculus. 3rd corrected ed. Stitz, Carl and Zeager, Jeffrey. Open Source Text. 2013 (classic)