MATH 25 Course Outline as of Summer 2019

CATALOG INFORMATION

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

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:

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area B	Communication Thinking	and Analytical	Effective: Fall 2006	Inactive:
CSU GE:	MC Transfer Area B4	Math/Quantitati	ncy we Reasoning	Fall 1981 Effective: Fall 2006	Inactive:
IGETC:	Transfer Area 2A	Mathematical C Quantitative Re	concepts & asoning	Effective: Fall 2006	Inactive:
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 degre tools based on writin solving assessments

Problem Solving: A demonstrate compete computational proble

Problem sets

Skill Demonstration demonstrations used performance exams.

None

Exams: All forms of performance exams.

Exams and quizzes

Other: Includes any fit into the above cate

Projects

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)

ee applicable course but assessment g are not included because problem are more appropriate for this course.	Writing 0 - 0%
ssessment tools, other than exams, that ence in computational or non- em solving skills.	
	Problem solving 5 - 20%
ns: All skill-based and physical for assessment purposes including skill	
	Skill Demonstrations 0 - 0%
formal testing, other than skill	
	Exams 70 - 95%
assessment tools that do not logically egories.	
	Other Category 0 - 10%