Subject:	MATH
Course Number:	190S
Descriptive Title:	Single Variable Calculus and Analytic Geometry I Support
Division:	Mathematical Sciences
Department:	Mathematics
Course Disciplines:	Mathematical Sciences
Catalog Description:	This course is designed to support students concurrently enrolled in calculus (Math 190). As needed, students review core skills and topics necessary to meet the calculus student learning outcomes and objectives. Students explore strategies and habits used by successful independent learners. Topics reviewed in this support course may include the following: simplifying polynomial, rational, radical, exponential, logarithmic, and absolute value expressions; solving equations; polynomial functions; rational functions; exponential functions; logarithmic functions; trigonometry functions; and solving trigonometric equations using right triangles.
Prerequisite:	
Co-requisite:	Math 190
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	2
Hours Laboratory (per week):	0
Outside Study Hours:	4
Total Course Hours:	36
Course Units:	2
Grading Method:	Pass/No Pass only
Credit Status:	Credit, non degree applicable
Transfer CSU:	No
Effective Date:	
Transfer UC:	No
Effective Date:	
General Education ECC:	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	

Other:	
Student Learning Outcomes:	***1. Understanding Concepts:*** Students will explain and demonstrate the idea of the limit, the derivative and the integral. ***2. Solving Problems:*** Solve problems, including problems involving velocity and acceleration, by using derivatives and integrals. ***3. Graphs:*** Students will use techniques of calculus to determine maxima, minima, and points of inflection on the graph of a function. ***4. Proofs****:* Students will analyze and construct proofs involving limits, derivatives, and integrals.
Course Objectives:	1. Simplify polynomial, rational, radical, exponential, logarithmic, and absolute value expressions. Solve polynomial, rational, radical, exponential, logarithmic, and absolute value equations. 2. Understand the basics of functions, including finding the domain and range and evaluating a function. 3. Find the zeros of polynomial functions and use them to graph the polynomial functions. 4. Find the asymptotes of rational functions and use them to graph the rational functions. 5. Graph exponential and logarithmic functions. 6. Evaluate the six trigonometric functions and solve trigonometric equations using right triangles.
Major Topics:	**I. BASICS OF FUNCTIONS (3 hours, lecture)** Concepts and skills as needed through just-in-time work to support: A. Definition of a function B. Domain and range of a function C. Evaluation of functions D. Composite, one-to-one, and inverse functions **II. MANIPULATING AND SOLVING (12 hours, lecture)** Concepts and skills as needed through just-in-time work to support: A. Simplifying and evaluating polynomial, rational, radical, exponential, logarithmic and absolute value expressions B. Solving polynomial, rational, radical, exponential, logarithmic, and absolute value equations C. Solving polynomial and rational inequalities D. Factoring polynomial expressions E. Negative and rational exponents F. Laws of logarithms **III. POLYNOMIAL, RATIONAL, AND RADICAL FUNCTIONS (5 hours, lecture)** Concepts and skills as needed through just-in-time work to support: A. Domain and range of polynomial, radical, and rational functions B. Graphing polynomial, radical, and rational functions C. Finding asymptotes of graphs of rational functions **IV. ESSENTIAL TRIGONOMETRY (10 hours, lecture)** Concepts and skills as needed through just-in-time work to support: A. Defining trigonometric functions using the unit circle and right triangles B. Evaluating trigonometric functions and their inverses C. Solving problems using angles and right triangles D. Graphing trigonometric functions and their inverses E. Solving trigonometric equations

	V. EXPONENTIAL AND LOGARITHMIC FUNCTIONS (6 hours, lecture) Concepts and skills as needed through just-in-time work to support: A. Domain and range of exponential and logarithmic functions B. Graphing exponential and logarithmic functions C. Inverses of exponential and logarithmic functions D. Applications of exponential and logarithmic functions
Total Lecture Hours:	36
Total Laboratory Hours:	0
Total Hours:	36
Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Find the domain of the function *f(x) = (x+2)/(3x+5).*
Critical Thinking Assignment 1:	Consider the function *f(x) = (x^2+2x-3)/(x^2-9).* (a) Find the domain of *f.* (b) Find the range of *f.* (c) Find the vertical and horizontal asymptotes of the graph of *f.* (d) Sketch the graph of *f.*
Critical Thinking Assignment 2:	Solve the equation. 2sin(x) = 1
Other Evaluation Methods:	Homework Problems, Objective Exam, Other Exams, Quizzes, Written Homework
If Other:	
Instructional Methods:	Demonstration, Discussion, Group Activities, Lecture
If other:	
Work Outside of Class:	Answer questions, Problem solving activity, Required reading, Skill practice, Study, Written work (such as essay/composition/report/analysis/research)
If Other:	
Up-To-Date Representative Texts:	Precalculus, 2nd ed, Abramson, OpenStax, 2024 Precalculus: Mathematics for Calculus, 8th ed, Stewart, Redlin, Watson, Cengage, 2023
Alternative Texts:	
Required Supplementary Readings:	None
Other Required Materials:	None
Requisite	Corequisite
Category	communication or computation skill
Requisite course:	Math 190
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	This corequisite course is necessary to satisfy AB 1705. Its intent is to strengthen and supplement the algebraic skills needed for success in the first calculus course. MATH 190 - Differentiating polynomial, rational, radical, exponential, logarithmic, and trigonometric functions. MATH 190 - Solve equations involving polynomial, rational, exponential, logarithmic, trigonometric functions.
Requisite Skill:	

Requisite Skill and Matching skill(s): Bold the requisite skill(s). if applicable	
Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). if applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Jasmine Ng
Date:	10/03/2024
Original Board Approval Date:	01/13/2025
Effective Term:	FA 2025