MATH-88: SUPPORT FOR CALCULUS I

Effective Term
Fall 2024

CC Approval
10/20/2023

AS Approval
11/14/2023

BOT Approval
11/16/2023

SECTION A - Course Data Elements

Send Workflow to Initiator
No

CB04 Credit Status
Credit - Non-degree Applicable

Discipline

Minimum Qualifications	And/Or
Mathematics (Master's Degree)	

Subject Code
MATH - Mathematics
Course Number
88

Department
Mathematics (MATH)

Division
Mathematics (MATH)

Full Course Title
Support for Calculus I

Short Title
Support for Calculus I

CB03 TOP Code
1702.00 - Mathematics Skills

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
E - Non-Occupational

Rationale
This course will help students who are almost ready to succeed in Calculus I, but for whom the just-in-time remediation will provide foundation for that success. This course complies with AB1705 and the chancellor's office directives.

SECTION B - Course Description

Catalog Course Description
Math 88, Support for Calculus I, is open only to students concurrently enrolled in Math 120, Calculus I. Concepts will be covered using a just-in-time approach for understanding of the corresponding concepts as they are presented in Math 120. Within this support

course, students engage in a comprehensive review of algebraic and trigonometric concepts crucial for achieving success in Calculus I.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit
No

Repeatability
Not Repeatable

Grading Options
Pass/No Pass Only

Allow Audit
Yes

Requisites

Corequisite(s)
Concurrent enrollment in Math-120 or equivalent.

Requisite Justification

Requisite Description
Course Not in a Sequence

Subject
Math
Course #
120

Level of Scrutiny
Requisite Established by Statute/Regulation

Explanation
Established by the Ed Code 78213(k)(1) in association with AB1705 legislature.

SECTION D - Course Standards

Is this course variable unit?
No

Units
2.00000

Lecture Hours
18.00

Lab Hours
54.00

Outside of Class Hours
36

Total Contact Hours
72

Total Student Hours
108

Distance Education Approval

Is this course offered through Distance Education?
Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Graph functions
2.	Solve equations
3.	Simplify expressions

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Solve linear, polynomial, rational, absolute value, radical, exponential, and logarithmic equations.
2.	Analyze and investigate properties of functions.
3.	Graph the elementary functions, examine their basic properties, and apply transformations to the graphs of functions.
4.	Solve linear, nonlinear, and absolute value inequalities.
5.	Perform basic operations on functions.
6.	Recognize the relationship between functions and their inverses graphically and algebraically and find inverse functions.
7.	Apply functions and other algebraic techniques to model real world Science, Engineering and/or Mathematical applications.
8.	Use formulas to find sums of finite and infinite series.
9.	Evaluate the trigonometric function of an angle in degree and radian measure.
10.	Solve trigonometric equations.
11.	Graph the basic trigonometric functions and apply changes in period, phase, and amplitude to generate new graphs.
12.	Evaluate and graph inverse trigonometric functions.
13.	Prove trigonometric identities.
14.	Study for a math class effectively.

Course Content

Using a just-in-time approach, the following content will be covered as required for success in the co-requisite Support for Calculus I course.

1. Functions including linear, polynomial, rational, radical, exponential, absolute value, logarithmic: definitions, evaluation, domain, and range.
2. Inverses of functions.
3. Algebra of functions.
4. Graphs of functions including asymptotic behavior, intercepts, and vertices.
5. Transformations of quadratic, absolute value, radical, rational, logarithmic, and exponential functions.
6. Equations including rational, linear, polynomial, radical exponential, absolute value and logarithmic.
7. Linear, nonlinear, and absolute value inequalities.
8. Characterization of the zeros of polynomials.
9. Sequences and series.
10. Introduction to limit notation and continuity via polynomial and rational functions.
11. Rectangular coordinates, angles, and circular/radian measure.
12. Definitions of the six trigonometric functions.

13. Simplification of trigonometric expressions.
14. Proofs of trigonometric identities.
15. Graphs of trigonometric functions: period, amplitude, phase shift, and asymptotes.
16. Inverse trigonometric functions and their graphs.
17. Trigonometric equations.
18. Study skills / affective domain (this should be integrated into the class, not taught as a separate section)

a. Growth mindset and grit.
b. How to study for a math class.
c. Test taking strategies.
d. Campus resources.

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Lecture	In class lecture
Discussion	Discussion of class topics
Other	Practice problems

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
Discussion Boards
E-mail Communication
Video or Teleconferencing

Student-Initiated Online Contact Types

Discussions
Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	Traditional exams including a final exam. Exams could include methods of differentiation (differentiation rules, chain rule, implicit differentiation, and logarithmic differentiation). Use implicit differentiation to find dy/dx for sin#(xy)=y. 2. Find the derivative. y=tan#(x^2+4e^(2x)). Exams could include solving applications of derivatives (such as derivative as a rate of change, optimization, and related rates). A box with a square base and open top must have a volume of 13,500 cm3. Find the dimensions of the box (in cm) that minimize the amount of material used.
Quizzes	Quizzes on class material
Homework	Homework problems from book.
Projects	Individual or group projects.
Lab Activities	In face-to-face classes, it is recommended that one hour a week in the Math Success Center be assigned as a homework assignment worth 3 - 5% of the semester grade.

Other	Additional assessment information: The Mathematics Department maintains a commitment to diverse teaching methods in courses emphasizing vital quantitative skills and qualitative reasoning ability. To that end, it is expected that sufficient formative assessments will be given to students that in frequency, length and rigor adequately assess both quantitative skills and qualitative reasoning.

Assignments

Reading Assignments

Example 1) Read the section on the Properties of the Trigonometric Functions.

Example 2) Read the section on Transformation of Functions. Be ready to discuss and work on graphing activities in class.

Writing Assignments

Example 1) Online or Paper Homework: Complete assigned exercises from the applicable section in the text.

Example 2) Group Activity: Given a rational equation, find domain, range, asymptotes, if any, the maximum and/or minimum value, and graph by hand.

Other Assignments

Other assignments as needed.

SECTION F - Textbooks and Instructional Materials

Material Type

Textbook

Author

Stewart, J.

Title

Calculus: Early Transcendentals

Edition/Version

9th

Publisher

Cengage Learning

Year

2022

ISBN #

9780357466278

Proposed General Education/Transfer Agreement

Do you wish to propose this course for a Local General Education Area?

No

Do you wish to propose this course for a CSU General Education Area?

No

Do you wish to propose this course for a UC Transferable Course Agreement (UC-TCA)?

No

Course Codes (Admin Only)

ASSIST Update

No

CB10 Cooperative Work Experience Status
N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status
Y - Credit Course

CB13 Special Class Status
N - The Course is Not an Approved Special Class

CB23 Funding Agency Category
Y - Not Applicable (Funding Not Used)

CB24 Program Course Status
Not Program Applicable

Allow Pass/No Pass
Yes

Only Pass/No Pass
No

Reviewer Comments
Katherine Rhyno (krhyno) (Wed, 20 Sep 2023 20:49:57 GMT): Please take a look at the requisite justification listed. If math-120 is listed as a co-requisite, then it is not a course in sequence. For the SLOs, they must be specific enough to be measurable and so you may want to model them from the objectives of the co-requisite course.