

TECHNICAL COLLEGE SYSTEM OF GEORGIA

ACADEMIC AFFAIRS DIVISION – OFFICE OF TECHNICAL EDUCATION

INFORMATION TICKET

Date: 2/16/2024

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Process

- Curriculum Revision
- Course Revision
- Probe Notice
- Probe Feedback
- Probe Outcome
- Other

Action Required

- Notify Appropriate Personnel
- Submit Vote
Submit Vote by: [Date]
- Notify Faculty and Administration
- Information Only

PAS Group Title/PAS Code: N/A

Program Standard Title/Major Code(s) and/or Course Standard Title/Course Code(s):

All programs that require MATH 1113 as a requirement course or elective

MATH 1113 Precalculus (202412L)

TICKET INFORMATION:

On March 17, 2022 the Math IFCC meet via Webex to begin the process of updating the precalculus course. On February 21, 2023 during the IFCC meeting all college voted to adopt the proposed changes as listed below.

The credit hours for the course has not changed. The new version number is 202412L. The new course version should be put into effect fall term 2024 (202512).

Course Title

Precalculus

Course Development

Standard

Learning Support

No

Course Description

Prepares students for calculus. The topics discussed include an intensive study of polynomial, rational, exponential, logarithmic, and trigonometric functions and their graphs. Applications include simple maximum and minimum problems, exponential growth and decay.

Pre-requisites

Regular Admission and MATH 1111 with C or better OR appropriate math placement test score.

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Regstr. Co-requisites

Regstr. Co-requisites: None

True Co-requisites

True Co-requisites: None

Course Length

	Lecture Contact Time	Regular Lab Type	Reg. Lab Contact Time	Other Lab Type	Oth. Lab Contact Time	Total Contact Time
Contact Hours Per Week	3 hrs	N/A	0 hrs	N/A	0 hrs	3 hrs
Contact Min/Hrs Per Semester	2250 min		0 min		0 min	45 hrs
	Lecture Credit Hours	Lab Credit Hours	Total Credit hours	WL		
Semester Credit Hours	3	0	3			101.25

Competencies & Outcomes

Order Description

1 Define basic concepts related to functions and their graphs

Order	Description	Learning Domain	Level of Learning
1	Define Function	Cognitive	Knowledge
2	Define domain and range of function	Cognitive	Knowledge
3	Define maximum and minimum values of a function	Cognitive	Knowledge
4	Define increasing, decreasing, and constant functions	Cognitive	Knowledge
5	Define end behavior of a function	Cognitive	Knowledge
6	Define zeros and roots of a function	Cognitive	Knowledge
7	Define transformation of a function	Cognitive	Knowledge
8	Define the difference quotient	Cognitive	Knowledge

2 Define linear and quadratic functions and solve applications involving them

Order	Description	Learning Domain	Level of Learning
1	Define a linear function	Cognitive	Knowledge
2	Solve applications that involve linear functions	Cognitive	Application
3	Define a quadratic function	Cognitive	Knowledge

4	Determine the vertex and the maximum or minimum value of a quadratic function	Cognitive	Application
5	Solve applications involving quadratic functions	Cognitive	Application

3 Define and graph polynomial functions including end behavior and zeros (real and imaginary)

Order	Description	Learning Domain	Level of Learning
1	Define polynomial functions	Cognitive	Knowledge
2	Draw the graph of a polynomial function	Cognitive	Application
3	Determine the end behavior of a polynomial function using the leading term test	Cognitive	Application
4	Determine all the real and imaginary zeros of a polynomial function	Cognitive	Application
5	Draw the graph of transformations of polynomial functions	Cognitive	Application

4 Define and graph rational functions including basic characteristics and transformations

Order	Description	Learning Domain	Level of Learning
1	Define a rational function	Cognitive	Knowledge
2	Determine the domain and range of a rational function	Cognitive	Application
3	Determine the vertical and horizontal asymptotes of a rational function	Cognitive	Application
4	Draw the graph of a rational function	Cognitive	Application
5	Draw the graph of a transformation of a rational function	Cognitive	Application

5 Perform operations involving functions including finding the inverse of a function

Order	Description	Learning Domain	Level of Learning
1	Combine functions using algebraic operations.	Cognitive	Application
2	Determine the composition of two functions	Cognitive	Application
3	Compute a the value of a composition of two functions given a domain value	Cognitive	Application
4	Determine the inverse of a function	Cognitive	Application

6 Define, evaluate, and graph exponential functions and use them to model phenomena

Order	Description	Learning Domain	Level of Learning
1	Define an exponential function	Cognitive	Knowledge
2	Calculate the value of an exponential function	Cognitive	Application
3	Determine the domain and range of an exponential function	Cognitive	Application
4	Draw the graph of an exponential function	Cognitive	Application
5	Draw the graph of transformations of exponential functions	Cognitive	Application

6 Use exponential functions to model natural applications Cognitive Application

7 Define a logarithm and use logarithmic properties

Order	Description	Learning Domain	Level of Learning
1	Define a logarithm	Cognitive	Knowledge
2	Use logarithmic properties to determine values of logarithmic expressions	Cognitive	Application
3	Solve logarithmic and exponential equations using properties of logarithms	Cognitive	Application

8 Define and graph a logarithmic function; find domain and range; and solve applications

Order	Description	Learning Domain	Level of Learning
1	Define a logarithmic function	Cognitive	Knowledge
2	Determine the domain and range of logarithmic functions	Cognitive	Application
3	Draw the graph of logarithmic functions	Cognitive	Application
4	Solve applications involving logarithmic functions	Cognitive	Application

9 Define, determine domain and range, and graph the six circular functions

Order	Description	Learning Domain	Level of Learning
1	Define the six circular functions	Cognitive	Knowledge
2	Describe the domain and range of the six circular functions	Cognitive	Knowledge
3	Draw the graph of circular functions using amplitude, period, and phase shift	Cognitive	Application

10 Use trigonometric identities to prove other identities and work with the inverse trig. functions

Order	Description	Learning Domain	Level of Learning
1	Use the fundamental trigonometric identities to prove other identities	Cognitive	Application
2	Use the sum and difference identities to prove other identities	Cognitive	Application
3	Use the double angle and half-angle identities to prove other identities	Cognitive	Application
4	Determine the domain and range of the trigonometric functions and their inverses	Cognitive	Application
5	Draw the graph of the trigonometric functions and their inverses	Cognitive	Application

11 Define the six trigonometric functions; use to solve right/oblique triangles and solve applications

Order	Description	Learning Domain	Level of Learning
1	Define six trigonometric functions	Cognitive	Knowledge
2	Solve right triangles using trigonometric functions	Cognitive	Application
3	Solve applications involving right triangles using the trigonometric functions	Cognitive	Application
4	Solve oblique triangles using the law of sines and law of cosines	Cognitive	Application

12 **Optional Topics**

Order	Description	Learning Domain	Level of Learning
1	Graph functions using graphing utility	Cognitive	Knowledge
2	Define vectors	Cognitive	Knowledge
3	Find the components of a vector	Cognitive	Knowledge
4	Perform operations on vectors	Cognitive	Application
5	Solve application problems involving vectors	Cognitive	Application
6	Define a complex number	Cognitive	Knowledge
7	Describe complex numbers in standard, rectangular, polar, and trigonometric forms	Cognitive	Comprehension
8	Draw the graph of a complex number on the Argand diagram	Cognitive	Application
9	Perform operations on complex numbers	Cognitive	Application
10	Use DeMoivre's Theorem to find powers and roots of complex numbers	Cognitive	Application