Precalculus

Course Description:

Precalculus is at least a 4 credit hour course that consists of the algebraic, graphic, numeric, and modeling approach to the study of functions, with or without technology, and with appropriate symbolic manipulation skills. It includes the use of appropriate mathematical language, with symbolism, to define, evaluate, and analyze the characteristics of functions. At least 70% of the course time must be spent on *all* essential topics.

Course objectives will stem from these essential topics:

- Definition of a function
- Properties and characteristics of functions including domain and range
- Function notation and evaluation including domain and range
- Inverse functions including domain and range
- Recognize and perform operations and transformations on functions symbolically, graphically, and in tabular form
- Synthetic division, Remainder Theorem, and Factor Theorem
- Interpret and construct functions as models
- Complex numbers
- Basic Trigonometric functions and their inverses related to both the right triangle and the unit circle
- Degree and radian measurement of an angle
- Solve right and oblique triangles using the Law of Sines and Law of Cosines
- Solve application problems involving right and oblique triangles
- Sequences and series and summation notation
- Verify and apply trigonometric identities including sum and difference; and double and half-angle
- Solve a variety of trigonometric and inverse trigonometric equations

Functions to be studied:

Linear; Quadratic; Absolute Value; Radical; Polynomial; Rational; Exponential; Logarithmic; Trigonometric; Inverse Trigonometric; Piecewise

Additional topics may include:

- Analytic geometry of conic sections
- Binomial Expansion Theorem
- Fundamental Theorem of Algebra
- Matrices
- Polar coordinates, equations, and graphs
- Vectors

Template for Course Inventory

Please fill out the following table and submit attachment(s). Approved courses must be resubmitted every 5 years.

Please attach the following materials:

- Current working syllabus and lab syllabus that contains instructional goals and/or objectives
- Comprehensive final; in the absence of a comprehensive final no more than 5 sample assessments.

Course #			
Course Title			
Beginning Term (when is/was it first offered?)	If more than five years, check box ☐		
	If less than five years, enter date:		
Credit Hours (including the entire course, lecture/lab)	Course:	Lab:	
Co-/Pre-requisite (test scores for placement)		Test	Score
	Co-Requisite		
	Pre-Requisite		
Successor Course:			
Catalog Description			
All Textbook(s)/Lab Manual	ISBN: Title: Publisher: Author: Edition: Copyright Year:	ISBN: Title: Publisher: Author: Edition: Copyright Year:	

Indicate the percent time spent on each learning objective (should add up to 100%). To indicate where evidence of each learning objective is located in this submission, please check all boxes that apply.

S – Syllabus   T – Topics list   C – Catalog Description   A – Assessment   O – other attachment

Indicate the typical percentage of time spent on each learning outcome/topic	Learning Objective	% Time	S	T	C	A	O
	1. Definition of a function						
	2. Properties and characteristics of functions including domain and range						
	3. Function notation and evaluation including domain and range						
	4. Inverse functions including domain and range						
	5. Recognize and perform operations and transformations on functions symbolically, graphically, and in tabular form						
	6. Synthetic division, Remainder Theorem, and Factor Theorem						
	7. Interpret and construct functions as models						
	8. Complex numbers						
	9. Basic Trigonometric functions and their inverses related to both the right triangle and the unit circle						
	10. Degree and radian measurement of an angle						
	11. Solve right and oblique triangles using the Law of Sines and Law of Cosines						
	12. Solve application problems involving right and oblique triangles						
	13. Sequences and series and summation notation						
	14. Verify and apply trigonometric identities including sum and difference; and double and half-angle						
	15. Solve a variety of trigonometric and inverse trigonometric equations						
Non-essential topics (may not be covered at all)	16. Analytic geometry of conic sections						
	17. Binomial Expansion Theorem						
	18. Fundamental Theorem of Algebra						
	19. Matrices						
	20. Polar coordinates, equations, and graphs						
	21. Vectors						
	22. Other:						

Functions to be Studied	Function	Check if covered
	1. Linear	
	2. Quadratic	
	3. Absolute Value	
	4. Radical	
	5. Polynomial	
	6. Rational	
	7. Exponential	
	8. Logarithmic	
	9. Trigonometric	
	10. Piecewise	
	11. Inverse Trigonometric	
Additional Comments:		

Name of individual submitting: _____Date:_____

Email address:_____