Wharton County Junior College

Administrative Master Syllabus

Course Information

Course Title	Pre-Calculus Math
Course Prefix, Num. and Title	MATH 2412
Division	Math & Physical Sciences
Department	Mathematics
Course Type	Academic WCJC Core Course
Course Catalog Description	In-depth combined study of algebra, trigonometry, and other topics for calculus readiness.
Pre-Requisites	MATH 1314; or four years of high school math including trigonometry or pre-calculus; or department head approval
Co-Requisites	None

Semester Credit Hours

Total Semester Credit Hours (SCH): Lecture Hours: Lab/Other Hours	4:4:0
Equated Pay Hours	4
Lab/Other Hours Breakdown: Lab Hours	0
Lab/Other Hours Breakdown: Clinical Hours	0
Lab/Other Hours Breakdown: Practicum Hours	0
Other Hours Breakdown	0

Approval Signatures

Title	Signature	Date
Prepared by:	Yvonne Smith Digitally signed by Yvonne Smith DN: cn=Yvonne Smith, o=WCJC, ou=Math and Physical Science, email=smithy@wcjc.edu, c=US Date: 2022.08.08 15:39:51 -05'00'	
Department Head:	Yvonne Smith Digitally signed by Yvonne Smith DN: cn=Yvonne Smith, o=WCJC, ou=Math and Physical Science, email=smithy@wcjc.edu, c=US Date: 2022.08.08 15:40:18 -05'00'	
Division Chair:	Jennifer Mauch Digitally signed by Jennifer Mauch DN: cn=Jennifer Mauch, o, ou=Wharton County Junior College, email=mauchj@wcjc.edu, c=US Date: 2022.08.18 15:59:18 -05'00'	
Dean/VPI:	Leigh Ann Collins Digitally signed by Leigh Ann Collins Date: 2022.08.30 12:12:15 -05'00'	
Approved by CIR:		

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Additional Course Information

Topical Outline: Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, and clinical or other non-lecture instruction).

Unit 1 – Functions
2.1 – Functions
2.2 – Graphs of Functions
2.3 – Getting Information from the Graph of a Functions
2.4 – Average Rate of Change of a Function
2.5 – Linear Functions and Models
2.6 – Transformations of Functions
2.7 – Combining Functions
2.8 – One-to-One Functions and Their Inverses

Unit 2 – Polynomial and Rational Functions
3.1 – Quadratic Functions and Models
3.2 – Polynomial Functions and Their Graphs
3.3 – Dividing Polynomials
3.4 – Real Zeros of Polynomials
3.5 – Complex Zeros and the Fundamental Theorem of Algebra
3.6 – Rational Functions
3.7 – Polynomial and Rational Inequalities

Unit 3 – Exponential and Logarithmic Functions
4.1 – Exponential Functions
4.2 – The Natural Exponential Function
4.3 – Logarithmic Functions
4.4 – Laws of Logarithms
4.5 – Exponential and Logarithmic Equations
4.6 – Modeling with Exponential Functions

Unit 4 – Trigonometric Functions: Unit Circle Approach and Rich Triangle Approach
5.1 – The Unit Circle
5.2 – Trigonometric Functions of Real Numbers
5.3 – Trigonometric Graphs
5.4 – More Trigonometric Graphs
5.5 – Inverse Trigonometric Functions and Their Graphs
6.1 – Angle Measure
6.2 – Trigonometry of Right Triangles
6.3 – Trigonometric Functions of Angles
6.4 – Inverse Trigonometric Functions and Right Triangles
6.5 – The Law of Sines
6.6 – The Law of Cosines

Unit 5 – Analytic Trigonometry; Polar Coordinates and Parametric Equations
7.1 – Trigonometric Identities
7.2 – Addition and Subtraction Formulas
7.3 – Double-Angle, Half-Angle, and Product-Sum Formulas
7.4 – Basic Trigonometric Equations
7.5 – More Trigonometric Equations

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8.1 – Polar Coordinates
8.2 – Graphs of Polar Equations
8.4 – Plane Curves and Parametric Equations

Course Learning Outcomes:

Learning Outcomes – Upon successful completion of this course, students will:

1. Demonstrate and apply knowledge of properties of functions.
2. Recognize and apply algebraic and transcendental functions and solve related equations.
3. Apply graphing techniques to algebraic and transcendental functions.
4. Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
5. Prove trigonometric identities.
6. Solve right and oblique triangles.

Methods of Assessment:

Final Exam (Required)

Other Methods of Assessment:

- Hour Exams
- Homework
- Quizzes
- Short Answer
- Discussion Board
- Participation
- Projects

Required text(s), optional text(s) and/or materials to be supplied by the student:

"Precalculus: Mathematics for Calculus" by Stewart, Redlin, and Watson; 7th edition; Cengage

Students must have computer access to the WCJC website, their WCJC student email and online accounts. WCJC has open computer labs, with internet access, on all campuses for students to use.

Suggested Course Maximum:

35

List any specific or physical requirements beyond a typical classroom required to teach the course.

None

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Course Requirements/Grading System: Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course.

A. Final Exam 15-30%
B. Other Course Requirements 70-85%

A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = 59 or below

Curriculum Checklist:

☐**Administrative General Education Course** (from ACGM, but not in WCJC Core) – No additional documents needed.

☒**Administrative WCJC Core Course**. Attach the Core Curriculum Review Forms

- ☒Critical Thinking
- ☒Communication
- ☒Empirical & Quantitative Skills
- ☐Teamwork
- ☐Social Responsibility
- ☐Personal Responsibility

☐**WECM Course** -If needed, revise the Program SCANS Matrix and Competencies Checklist

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Core Curriculum Review Form

Foundational Component Area: Core 020: Mathematics

Course Prefix & Suffix: MATH 2412 – Pre-Calculus Math

Core Objective:

Critical Thinking Skills—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

Student Learning Outcome Supporting Core Objective*:*

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
State Mandated	Recognize and apply algebraic and transcendental functions and solve related equations. (SLO #2)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result. A brief paragraph will be included explaining what was done.	A quiz, test, or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for critical thinking will assess this.
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.
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Core Curriculum Review Form

Foundational Component Area: Core 020: Mathematics

Course Prefix & Suffix: MATH 2412 – Pre-Calculus

Core Objective:

Communication Skills—to include effective development, interpretation and expression of ideas through written, oral and visual communication

Student Learning Outcome Supporting Core Objective*:*

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
State Mandated	Recognize and apply algebraic and transcendental functions and solve related equations. (SLO #2)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result. A brief paragraph will be included explaining what was done.	A quiz, test, or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for communication skills will assess this.
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.
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Core Curriculum Review Form

Foundational Component Area: Core 020: Mathematics

Course Prefix & Suffix: MATH 2412 – Pre-Calculus

Core Objective:

Empirical and Quantitative Skills—to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Student Learning Outcome Supporting Core Objective*:*

For each core objective, there must be at least two different methods of assessment.

SLO Status	Student Learning Outcome (SLO)	Learning Activity	Assessment
State Mandated	Recognize and apply algebraic and transcendental functions and solve related equations. (SLO #2)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result. A brief paragraph will be included explaining what was done.	A quiz, test, or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for EQS will assess this.
Choose a SLO status.	Insert SLO (from Administrative Master Syllabi)	Provide a brief name and description of the sample learning activity.	Provide a brief name and description of the sample quiz, exam, rubric, assignment, etc. for assessing the objective.
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