



**Purpose:** It is the intention of this Administrative-Master Syllabus to provide a general description of the course, outline the required elements of the course and to lay the foundation for course assessment for the improvement of student learning, as specified by the faculty of Wharton County Junior College, regardless of who teaches the course, the timeframe by which it is instructed, or the instructional method by which the course is delivered. It is not intended to restrict the manner by which an individual faculty member teaches the course but to be an administrative tool to aid in the improvement of instruction.

**Course Title -** Trigonometry

**Course Prefix and Number –** MATH 1316

**Department -** MATH

**Division –** Math and Science

**Course Type:** (check one)

- Academic General Education Course (from ACGM – but not in WCJC Core)
- Academic WCJC Core Course
- WECM course (This course is a Special Topics or Unique Needs Course: Y  or N )

**Semester Credit Hours # : Lecture Hours # : Lab/Other Hours #** 3:3:0

**Equated Pay hours for course -** 3

**Course Catalog Description –** In-depth study and applications of trigonometry including definitions, identities, inverse functions, solutions of equations, graphing, and solving triangles. Additional topics such as vectors, polar coordinates and parametric equations may be included.

**Prerequisites/Co-requisites –** TSI satisfied in Math requirement met and: Minimum of one year high school algebra and one year of plane trigonometry or precalculus; **or** two years high school algebra; **or** any college- level MATH course (except MATH 1324, 1325,1342); or consent of department head.

Type: ACAD

List Lab/ Other Hours
Lab Hours 0
Clinical Hours 0
Practicum Hours 0
Other (list) 0

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**Date** 8-24-13

**Reviewed by Department Head** Dale Neaderhouser

**Date** 8-24-13

**Accuracy Verified by Division Chair** Kevin Dees

**Date** 8-24-13

**Approved by Dean or Vice President of Instruction** *ggghunt*

**Date** 8-24-13



**I. 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):

Sections: Topics

1.1, 1.2 Basic Concepts and Angles

1.3, 1.4 Angle Relationships, Similar Triangles, Definitions of Trig Functions

1.5 Using the Definitions of the Trig Functions

2.1 Trig Functions of Acute Angles

2.2 Reference Angles; Co-terminal Angles

2.3 Calculator Use; Trig Function Values: Exact and Approx

2.4 Solving Right Triangles

Test #1

3.1 Radian Measure

3.2, 3.3 Applications of Radian Measure; Circular Functions

3.4 Linear and Angular Velocities

4.1 Graphs of the Sine and Cosine I

4.2 Graphs of the Sine and Cosine II

4.3 Graphs of the Other Trig Functions

5.1 Fundamental Identities

5.2 Verifying Trig Identities

5.3 Sum and Difference Identities for Cosine

5.4 Sum and Difference Identities for Sine and Tan

5.5 Double-Angle Identities

5.6 Half-Angle Identities

5.7 Sum and Product Identities

Test #2

6.2 Trig Equations (Mention a problem or two from 6.1)

6.3 Trig Equations with Multiple Angles

7.1 Oblique Triangles and the Law of Sines

7.2 The Ambiguous Case

7.3 The Law of Cosines

7.4, 7.5 Vectors; Applications of Vectors

Test #3

8.1, 8.2 Review of Algebra of Complex #S; Trig Form of Complex #S

8.3 Product and Quotient Theorem

9.1, 9.2 Exponential and Log Functions; Properties of Logs

9.3 Common and Natural Logs and Applications

Final Exam

**II. Course Learning Outcomes**

<b>Learning Outcomes</b>	<b>Methods of Assessment</b>
<p><b>Upon successful completion of this course, the student will:</b></p> <ol style="list-style-type: none"> <li>1. Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.</li> <li>2. Graph trigonometric functions and their transformations.</li> <li>3. Prove trigonometric identities.</li> <li>4. Solve trigonometric equations.</li> <li>5. Solve right and oblique triangles.</li> <li>6. Use the concepts of trigonometry to solve applications.</li> </ol>	<p>Outcomes assessed by:</p> <p>Hour exams Final Short Answer Discussion Board</p>

**III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.**

Trigonometry, 2<sup>nd</sup> Edition 2011; Coburn and Herdlick; McGraw-Hill Publisher  
Calculator (instructor’s discretion)

**IV. Suggested Course Maximum - 35**

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

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.

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

Critical Thinking competency: This course requires more than memorization and comprehension of factual information. It emphasizes the application, analysis, synthesis, and evaluation of concepts.

Grading System:

a. Average of one hour exams	40-85%	A= 90-100
b. Daily participation, quizzes, extra credit	0-15%	B= 80-89
c. Homework grade	0-20%	C= 70-79
d. Comprehensive Final	15-30%	D= 60-69
Or grading as specified by the instructor.		F= 59 or below

**VII. Curriculum Checklist**

- **Academic General Education Course** (from ACGM – but not in WCJC Core)  
No additional documentation needed

- **Academic WCJC Core Course**  
Attach the Core Curriculum Review Forms

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

- **WECM Courses**

**Core Curriculum Review Form**

Foundational Component Area: **Mathematics**

**Course Prefix & Suffix: Math 1316**

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.*

<b>SLO Status</b>	<b>Student Learning Outcome (SLO)</b>	<b>Learning Activity</b>	<b>Assessment</b>
The SLO is:	Insert SLO (from Administrative Master Syllabi(AMS)) below	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:
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Use the concepts of trigonometry to solve applications. (AMS SLO #6)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result. Including a brief paragraph 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.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Prove trigonometric identities. (AMS SLO #3)	A written paragraph explaining the steps one takes to prove an identity using the identities proved in class.	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.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Solve trigonometric equations. (AMS SLO #4)	Have the student grade an incorrect solution of a trigonometric equation. The student should write a brief paragraph stating what was done incorrectly and what must be done to correct the solution.	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.



**Core Curriculum Review Form**

Foundational Component Area: **Mathematics**

**Course Prefix & Suffix: Math 1316**

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.*

<b>SLO Status</b>	<b>Student Learning Outcome (SLO)</b>	<b>Learning Activity</b>	<b>Assessment</b>
The SLO is:	Insert SLO (from Administrative Master Syllabi(AMS)) below	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:
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Use the concepts of trigonometry to solve applications. (AMS SLO #6)	A word problem (application) where the student must identify variables, assemble the correct formulas and solve for the desired result. Including a brief paragraph 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 will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Prove trigonometric identities. (AMS SLO #3)	A written paragraph explaining the steps one takes to prove an identity using the identities proved in class.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for communication will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Solve trigonometric equations. (AMS SLO #4)	Have the student grade an incorrect solution of a trigonometric equation. The student should write a brief paragraph stating what was done incorrectly and what must be done to correct the solution.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for communication will assess this.

**Core Curriculum Review Form**

Foundational Component Area: **Mathematics**

**Course Prefix & Suffix: Math 1316**

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.*

<b>SLO Status</b>	<b>Student Learning Outcome (SLO)</b>	<b>Learning Activity</b>	<b>Assessment</b>
The SLO is:	Insert SLO (from Administrative Master Syllabi(AMS)) below	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:
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians. (AMS SLO #1)	A problem where the student computes the six trigonometric function for angles that are multiples of 30, 45, and 60 degrees (alternately in radians) in all quadrants of the unit circle.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for EQS will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Graph trigonometric functions and their transformations. (AMS SLO #2)	A problem where the student sketches $y = A + Bf(C(x-h))$ where $f(x)$ is a trigonometric function and the constants represent shifts, scaling and reflection. Labeling is critical to show position, scale and period.	A quiz, test or scanned artifact showing the student's written answer. Grading for correctness and the rubric for EQS will assess this.
<input checked="" type="checkbox"/> Existing <input type="checkbox"/> Revised <input type="checkbox"/> New <input checked="" type="checkbox"/> State Mandated	Solve right and oblique triangles. (AMS SLO #5)	A problem where the student solves a triangle using the law of sines or law of cosines. The student should show all steps.	A quiz, test or discussion board artifact showing the student's written answer. Grading for correctness and the rubric for EQS will assess this.