

Administrative Master Syllabus

Course Information

Course Title	Plane Trigonometry
Course Prefix, Num. and Title	MATH 1316
Division	Math & Physical Sciences
Department	Mathematics
Course Type	Academic WCJC Core Course
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.
Pre-Requisites	TSI Satisfied in Math
Co-Requisites	None

Semester Credit Hours

Total Semester Credit Hours (SCH): Lecture Hours:	3:3:0
Lab/Other Hours	
Equated Pay Hours	3
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
Department Head:		
Division Chair:		
VPI:		



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 – Trigonometric Functions, Acute Angles and Right Triangles

- 1.1 – Angles
- 1.3 – Trigonometric Functions
- 1.4 – Using the Definition of Trigonometric Functions
- 2.1 – Trigonometric Functions of Acute Angles
- 2.2 – Trigonometric Functions of Non-Acute Angles
- 2.3 – Approximations of Trigonometric Function Values
- 2.4 – Solutions and Applications of Right Triangles
- 2.5 – Further Applications of Right Triangles

Unit 2 – Radian Measure, The Unit Circle, and Graphs of Circular Functions

- 3.1 – Radian Measure
- 3.2 – Applications of Radian Measure
- 3.3 – The Unit Circle and Circular Functions
- 3.4 – Linear and Angular Speed
- 4.1 – Graphs of Sine and Cosine Functions
- 4.2 – Translations of the Graphs of Sine and Cosine Functions
- 4.3 – Graphs of Tangent and Cotangent Functions
- 4.4 – Graphs of Secant and Cosecant Functions

Unit 3 – Trigonometric Identities

- 5.1 – Fundamental Identities
- 5.2 – Verifying Trigonometric Identities
- 5.3 – Sum and Difference Identities for Cosine
- 5.4 – Sum and Difference Identities for Sine and Tangent
- 5.5 – Double-Angle Identities
- 5.6 – Half-Angle Identities

Unit 4 – Inverse Circular Functions, Trigonometric Equations, Applications of Trigonometry

- 6.1 – Inverse Trigonometric Functions
- 6.2 – Trigonometric Equations I
- 6.3 – Trigonometric Equations II
- 7.1 – Oblique Triangles and The Law of Sines
- 7.2 – The Ambiguous Case of the Law of Sines
- 7.3 – The Law of Cosines
- 7.4 – Geometrically Defined Vectors and Applications
- 7.5 Algebraically Defined Vectors and the Dot Product

OPTIONAL Unit 5 – Complex Numbers, Polar Equations, and Parametric Equations

- 8.1 – Complex Numbers
- 8.2 – Trigonometric (Polar) Form of Complex Numbers
- 8.3 – Polar Equations and Graphs
- 8.4 – Parametric Equations, Graphs, and Applications

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

1. Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
2. Graph trigonometric functions and their transformations.
3. Prove trigonometric identities.
4. Solve trigonometric equations.
5. Solve right and oblique triangles.
6. Use the concepts of trigonometry to solve applications.

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:

“Trigonometry” by Lial, Hornsby, Schneider, and Daniels; 12th edition; Pearson

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



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

Core Curriculum Review Form

Foundational Component Area: Core 020: Mathematics

Course Prefix & Suffix: MATH 1316 – Plane Trigonometry

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	Use the concepts of trigonometry to solve applications. (SLO #6)	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 1316 – Plane Trigonometry

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	Use the concepts of trigonometry to solve applications. (SLO #6)	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.
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Core Curriculum Review Form

Foundational Component Area: Core 020: Mathematics

Course Prefix & Suffix: MATH 1316 – Plane Trigonometry

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	Use the concepts of trigonometry to solve applications. (SLO #6)	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.
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