Revised 05/09

ARAPAHOE COMMUNITY COLLEGE SYLLABUS

Course Number: MAT 122 **Title:** College Trigonometry **Credits:** 3

Instructor:
Phone:
E-mail:
Office Location (if applicable):
Office Hours (if applicable):

Catalogue Description:

This course is designed primarily for students who are continuing into the calculus sequence. This course examines trigonometric functions and their graphs, identities and equations and solutions of triangles. Vectors, polar coordinates and equations of conic sections are introduced.

Pre OR Corequisites: MAT 121

Text: Trigonometry: Lial, Hornsby, Schneider, 9th edition

Required Course Material: Text, graph paper, TI-83 or TI-86 graphing calculator.

Optional Course Material: Study and Solutions Guide
DVD's for this course are available for viewing in the library.

Grading Criteria:

Makeup Policy:

Attendance Policy:

Important Dates:

Last day to drop with refund (include date):
Last day to withdraw without refund (include date):

Support Services: Arapahoe Community College provides **accommodations** to qualified students with disabilities. To request accommodation, contact Disability Services in M2710 or call (303) 797-5937 v/tty.

Student Success Center for all ACC students: Peer and professional tutoring in Room M2720 now includes student tutors, math support, and the Writing Center in one location to provide academic assistance for all your classes.

ACC math instructors provide help with concepts, homework, online resources and graphing calculator workshops. Students may watch course related videos and DVDs in the library. For information, contact the Student Success Center at 303-797-5669 or email Mathhelp@arapahoe.edu

Academic Honesty Statement
Arapahoe Community College is committed to academic honesty and scholarly integrity. The College can best function and accomplish its mission in an atmosphere of the highest ethical standards. All members of the College community are expected and encouraged to contribute to such an environment by observing all accepted principles of academic honesty. Academic dishonesty includes but is not limited to: plagiarism, cheating, fabrication, grade tampering, misuse of computers and other electronic technology, and facilitating academic dishonesty. Those found in violation may also be subject to potential disciplinary sanctions under theArapahoe Community College Code of Conduct. OR "Those found in violation of academic honesty will be subject to the following disciplinary actions: course failure

The safety and security of all our students, faculty, staff and visitors is of the utmost importance to the Campus Police Department. We rely on each of you to be an additional set of ears and eyes to help maintain campus safety. Please be diligent in your efforts to report suspicious or unusual behavior or circumstances to the Campus Police Department. Trust your instincts when something doesn't look, seem or feel right and tell someone. The Campus Police can be reached at 303-797-5800 or in M2600 on the second floor behind Information Central. Additional safety information can be found on the website at htttp//www.arapahoe.edu/studentsvcs/campuspolice/index.html

Online Course Evaluations: As this course nears completion, you will have the opportunity to complete a confidential evaluation of the class online. Login instructions will be sent to your 'student.cccs.edu' e-mail address. Your feedback is important, and ensures that ACC continues to offer quality instruction that meets your needs. Please take time to complete the survey – I appreciate your feedback.

E-mail Communication: Effective 1/20/09 electronic correspondence from ACC employees will go to your student email account *only*. When you activate your account you can forward emails to an e-mail account that you already have. To activate your student e-mail account, go to http://www.arapahoe.edu and click on the "Activate Student E-mail" link. Questions? Please call 303-797-5621.

Contact Information for Learning Support Services

Library	**M2500 303-797-5090**
Technical Support	**797-5700 x3199**
Writing Center	**M2855 303-797-5830**
Advising/Counseling	**M2010 303-797-5651**
Instructional Testing Center	**M2280 303-797-5993**
Bookstore	**M1200 303-797-5676**
Computer Lab	**M1650 303-797-5907**
Tutorial Services	**M2710 303-797-5669**
Career Center	**M2025 303-797-5805**
eLearning	**303-797-5700 x6700**

Course Content: Emphasis of right triangle trigonometry is recommended and introduction of trigonometric functions through right triangles before the unit circle definitions is the instructor's prerogative.

Chapter 1: TRIGONOMETRIC FUNCTIONS (1 ½ -2 weeks)

1.1 Angles

1.2 Angle Relationships and Similar Triangles

1.3 Trigonometric Functions

1.4 Using the Definitions of the Trigonometric Functions

Chapter 2: ACUTE ANGLES AND RIGHT TRIANGLES (2 - 3 weeks)

2.1 Trigonometric Functions of Acute Angles

2.2 Trigonometric Functions of Non-Acute Angles

2.3 Finding Trigonometric Function Values Using a Calcuator

2.4. Solving Right Triangles

2.5 Further Applications of Right Triangles

Chapter 3: RADIAN MEASURE AND CIRCULAR FUNCTIONS (1½ -2 weeks)

3.1 Radian Measure

3.2 Applications of Radian Measure

3.3 The Unit Circle and Circular Functions

3.4 Linear and Angular Speed

Chapter 4: GRAPHS OF THE CIRCULAR FUNCTIONS (1 ½ - 2 weeks)

- 4.1 Graphs of the Sine and Cosine Functions
- 4.2 Translations of the Graphs of the Sine and Cosine
- 4.3 Graphs of the Tangent and Cotangent Functions
- 4.4 Graphs of the Secant and Cosecant Functions
- 4.5 Harmonic Motion

Chapter 5: TRIGONOMETRIC IDENTITES (3-4 weeks)

- 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

Chapter 6: INVERSE CIRCULAR FUNCTIONS AND TRIGONOMETRIC EQUATIONS (1-2 weeks)

- 6.1 Inverse Circular Functions
- 6.2 Trigonometric Equations I
- 6.3 Trigonometric Equations II
- 6.4 Equations Involving Inverse Trigonometric Functions

Chapter 7: APPLICATIONS OF TRIGONOMETRY AND VECTORS (1 ½ - 2 weeks)

- 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 Vectors, Operations, and the Dot Product
- 7.5 Applications of Vectors

Chapter 8: COMPLEX NUMBERS, POLAR EQUATIONS AND PARAMETRIC EQUATIONS (2-3 weeks)

- 8.1 Complex Numbers
- 8.2 Trigonometric (Polar) Form of a Complex Number
- 8.3 The Product and Quotient Theorems
- 8.4 DeMoivre's Theorem; Powers and Roots of Complex Numbers
- 8.5 Polar Equations and Graphs
- 8.6 Parametric Equations, Graphs and Applications (optional)

After successful completion of this course the student should be able to:			
No.	**Competency**	**Comp Code**	**Eval Code**
1	**Evaluate the trigonometric functions and find their graphs.**		A,W
	Identify and discuss trigonometric vocabulary.	**B**	
A	Measure angles in degrees and radians.		
B	Calculate the values of trigonometric functions of acute angles using right triangles.		
C	Evaluate trigonometric functions for general angles.		
D	Use reference angles to evaluate trigonometric functions.		
E	Construct the graphs of the trigonometric functions.		
F	Read and interpret angular and linear velocity type problems.		
2	**Manipulate trigonometric expressions and equations.**	B	A,W
A	Recall and apply the reciprocal, quotient, Pythagorean, and even-odd identities to simplify expressions.		
B	Use the fundamental identities to verify trigonometric identities.		
C	Employ the formulas for sums and differences to find exact values of the trigonometric functions for selected angles, and to simplify expressions.		
	Derive and use the double-angle and half-angle formulas.		
D	Use the product and sum formulas, and graph combinations of sine and cosine functions.		
E	Describe the relationship between the trigonometric functions and their inverses.		
F	Calculate solutions for trigonometric equations with variable side conditions.		
G			
3	**Apply trigonometric concepts to various problems.**	B	A,W
A	Solve right triangles.		
B	Use the law of sines to solve a general triangle, including the ambiguous case.		
	Use the law of cosines to solve a general triangle.		
C	Add, subtract, and find scalar multiples of vectors, and to use the standard basis vectors.		
D	Convert from cartesian to polar coordinates and vice versa, and graph polar equations.		
E	Read, interpret, and use a drawing to solve nautical type problems.		
F			
4	Recognize and graph the equations of conic sections.	B	A,W
A	Describe the standard form of the equation of an ellipse and graph the equation.		
B	Recognize and obtain the standard form of the equation of a parabola and graph the equation.		
C	Recognize and obtain the standard form of the equation of a hyperbola and graph the equation.		
D	Change to a new pair of coordinate axes in order to simplify graphing.		

Competency Code:
B = Basic Skill

Evaluation Code:
A = Authentic , W = Written