

This is a SouthArk Master Syllabus. The course syllabus distributed by the instructor may include additional requirements, must be followed by the student in the given term, and is considered to supersede the Master Syllabus.

Course Number

MATH 1033

Course Title

Plane Trigonometry

Course Description

Topics include right and oblique triangles, angle measurement, trigonometric functions, solving triangles, trigonometric identities, solving trigonometric equations, graphs of the trigonometric functions, inverse trigonometric functions, complex numbers and their trigonometric forms.

College Mission

South Arkansas Community College promotes excellence in learning, teaching, and service; provides lifelong educational opportunities; and serves as a cultural, intellectual, and economic resource for the community.

College Wide Student Learner Outcomes

Critical Thinking

Responsibility

Communication

ACTS Course

Program Course

ACTS Outcomes

The students will:

1. Perform trigonometric functions
2. Solve problems using trigonometric relations, including circular motion.
3. Define complex numbers and represent them trigonometrically.
4. Use technology appropriately.
5. Demonstrate facility with trigonometric identities, equations, and applications.

Program Outcomes

Course Outcomes

CLO #	Course Outcomes	Unit Outcomes/ Competencies	ACTS	Program Outcomes	Critical Thinking	Communication	Responsibility	Assessment
CLO 1	Perform trigonometric functions	II, II, III, IV	1		CT2			Final Exam
CLO 2	Solve problems using trigonometric relations, including circular motion.	II, III	2		CT2			Final Exam
CLO 3	Define complex numbers and represent them trigonometrically.	VII	3		CT2			Final Exam
CLO 4	Use technology appropriately.	I, II, III, IV, VI	4		CT2			Final Exam
CLO 5	Demonstrate facility with trigonometric identities, equations, and applications.	I, V, VI	5		CT2			Final Exam

Unit Outcomes/ Competencies

- I. The trigonometric functions. The student should be able to:
 1. Do calculations involving angle measures.
 2. Identify and find co-terminal angles.
 3. Draw angles in standard position.
 4. Find the distance from the origin to a point (x,y).
 5. Apply the definitions to find the trigonometric functions values of an angle.

6. Evaluate a given trigonometric expression.
7. Find all the trigonometric function values of an angle when the value of one function and the quadrant is known.
8. Write the eight fundamental identities.
9. Apply the eight fundamental identities.

II. Acute Angles and Right Triangles. The student should be able to:

1. Apply the right triangle definitions of the trigonometric functions.
2. Apply the co-function identities.
3. Learn and apply the trigonometric function values of the special angles.
4. Find the reference angle for a given angle.
5. Find the exact function values of an angle for which the reference angle is one of the special angles.
6. Approximate function values using a calculator.
7. Find an angle when given a function value and an interval.
8. Solve a right triangle when given two sides or when given an angle and a side.
9. Solve word problems that involve right triangles.

III. Radian Measure and the Circular Functions. The student should be able to:

1. Convert between degrees and radians.
2. Find function values for angles in radians.
3. Solve problems involving arc length of a circle.
4. Solve problems involving sector of a circle.
5. Find values of the circular functions.
6. Determine a number that has a given circular function value.
7. Apply the circular functions.
8. Solve problems that apply linear and angular velocity.

IV. Graphs of the Circular Functions. The student should be able to:

1. Sketch the graph of the sine function.
2. Sketch the graph of the cosine function.
3. Determine the amplitude, the period, and sketch the graph of functions of the form $y = a \sin(bx)$ or $y = a \cos(bx)$.
4. Determine and verify on a calculator the horizontal translations of the graphs of sine and Cosine functions
5. Identify the properties of the graphs of the tangent and cotangent functions.
6. Identify the properties of the graphs of the secant and cosecant functions.

V. Trigonometric Identities. The student should be able to:

1. Apply the fundamental identities.
2. Apply the negative angle identities.
3. Find all trigonometric function values of an angle when given one value and the quadrant.
4. Simplify expressions by writing in terms of sine and cosine.
5. Express one function in terms of another.
6. Verify identities.
7. Show that an equation is not an identity.
8. Write and apply the sum and difference identities for cosine.
9. Write and apply the sum and difference identities for sine and tangent.
10. Find the function values and the quadrant of $A+B$ or $A-B$ when given information about A and B .
11. Apply the double angle identities for sine and for cosine.
12. Find function values of A when given information about $2A$.
13. Simplify expressions using the double angle identities.
14. Verify identities with double angles.
15. Use the half-angle identities to find exact values.
16. Find function values of $A/2$ when given information about A .

VI. Inverse Trigonometric Functions and Trigonometric Equations. The student should be able to:

1. Find inverse function values.
2. Simplify expressions involving inverse functions.
3. Solve trigonometric equations by linear methods, intersection of graphs method, x-intercept method, factoring, squaring, and the quadratic formula.

- VII. Complex Numbers. The student should be able to:
1. Write a complex number in standard form.
 2. Perform operations on complex numbers.
 3. Graph complex numbers on the complex plane.
 4. Convert between the rectangular form and the trigonometric form for a complex number.

Assessment Description(s)

All students completing the course will take a departmental final exam. For each of the Learner Outcomes, the instructor(s) will choose two questions on the Final Exam that they determine best tests that outcome. Proficiency for each outcome will be defined as the student correctly solving at least one of those two problems. The goal is that for each of the Learner Outcomes 70% of the course completers will demonstrate proficiency.

Materials and Technological Requirements

1. Textbook and access code to MyLabsPlus.
2. Graphics calculator. We will use the TI-84 Plus Silver Edition in class.
3. Angle Protractor
4. Loose leaf notebook paper.
5. Three ring binder to keep notes and work.

Class Attendance Policy

Students are expected to attend all classes in which they are enrolled. If a student is absent from a class session, it is the student’s responsibility to make arrangements to complete or make up any work missed. No make-up work for missed classes will be allowed without the approval of the instructor. Students who enroll late must assume all responsibility for work missed. Classes not attended as a result of late enrollment may be counted toward excessive absences. Students not attending the entire class period may be counted absent for that period. An instructor may drop students with a grade of “WE” if students have been absent for an excessive number of days. Warning letters will be sent to the students advising them of the consequences of nonattendance and urging them to contact their instructors immediately. Excessive absences are defined as follows:

Regular Semester

- Courses which meet once a week 2 absences
- Courses that meet twice per week 3 absences
- Courses that meet four times per week 5 absences

Summer Session

- Courses that meet four times per week in a five week session 3 absences
- Courses which meet two evenings per week in a 10 week session 3 absences

Students enrolled in special programs or individualized instruction should contact their program director/instructor regarding specific attendance requirements for the program/course. Some of the selective-admission, health-science programs have specific criteria regarding attendance. Students are encouraged to refer to program policies in these matters.

Jury Duty/Military/Official School Function

Scheduled absences are those that occur due to college-related activities or as a result of summons to jury duty or military duty. Classes missed as a result of scheduled absences will not be counted as excessive absences if the instructor is notified and provided documentation prior to the absence(s). Make-up work for scheduled absences will be at the discretion of the instructor.

In all instances, documentation must be provided to the instructor within 24 hours of receipt. Documentation should come from an appropriate party on letterhead or other official stationery with a signature and contact information. Documentation should list the corresponding dates of the leave.

Medical leave

For medical-related absences, documentation must include written notice from the treating medical professional documenting time needed off related to medical reasons and time student may resume classes. The medical reason does not need to be listed on the documentation; the documentation must include only that there is a medical reason, the amount of time the student needs to be absent, and the time the student should be able to return to classes. Students who elect to work at home while on excused leave must meet with their instructors to make arrangements to do so. Working on coursework while on medical leave is not a requirement but can be requested by students. If students request that they be allowed to work at home while on an excused leave, the instructor will make every reasonable effort to ensure that the student is able to do so.

For students who have a medical condition necessitating time off or accommodation:

- 1) They may work at home on assignments if they choose to if on medical leave approved by a medical professional
- 2) Receive appropriate accommodations related to coursework (i.e., excused from labs with potentially harmful chemicals, have a larger desk, etc.)
- 3) Resume their studies where they left off once they return to classes
- 4) Be allowed to make up any missed work related to medical leave
- 5) Receive incompletes on their transcripts until coursework is completed, according to the incomplete grade contract.
- 6) Be given a reasonable time frame in which to complete missed coursework

Academic Honesty Policy

Students enrolled at South Arkansas Community College are expected at all times to uphold standards of integrity. Students are expected to perform honestly and to work in every way possible to eliminate academic dishonesty. Academic dishonesty includes cheating and plagiarism, which are defined as follows:

- Cheating is an attempt to deceive the instructor in his/her effort to evaluate fairly an academic exercise. Cheating includes copying another student's homework, class work, or required project (in whole or in part) and/or presenting another's work as the student's own. Cheating also includes giving, receiving, offering, and/or soliciting information on a quiz, test, or examination.
- Plagiarism is the copying of any published work such as books, magazines, audiovisual programs, electronic media, and films or copying the theme or manuscript of another student. It is plagiarism when one uses direct quotations without proper credit or when one uses the ideas of another without giving proper credit. When three or more consecutive words are borrowed, the borrowing should be recognized by the use of quotation marks and proper parenthetical and bibliographic notations.

If, upon investigation, the instructor determines that the student is guilty of cheating or plagiarism, the following penalties will apply:

- The student will receive a penalty of no less than a zero on the work in question.
- The instructor will submit a Student Academic Misconduct Form, written report of the incident, to the appropriate dean.
- The dean will submit form to Vice President for Learning to determine disciplinary action.
- The Vice President for Learning will determine whether further disciplinary action will be taken.
- All decisions may be appealed for review through the college's academic appeals procedure.

Equal Opportunity-Affirmative Action Statement

South Arkansas Community College does not discriminate on the basis of age, race, color, creed, gender, religion, marital status, veteran's status, national origin, disability, or sexual orientation in making decisions regarding employment, student admission, or other functions, operations, or activities.

Library Services

Library Homepage: <http://southark.libguides.com/homepage> Library Contact: LibraryStaff@southark.edu or 870.864.7115

Procedures to Accommodate Students with Disabilities:

If you need reasonable accommodations because of a disability, please report this to the Vice President of Student Services with proper documentation. . VPSS Contact: 870.875.7262

The Early Alert System

In an effort to ensure student retention and success, South Arkansas Community College employs an Early Alert System to identify and support at-risk students as soon as possible in a given semester. The intent of Early Alert is to provide this assistance while there is still time to address behaviors or issues that have the potential of preventing students from completing their courses and degree plans. Students referred through the Early Alert System will be required to work on a corrective action plan with their student advising coach and to include attendance accountability and mandatory academic tutoring either in the academic division or in the Testing and Learning Center (TLC).

Once the Student Advising Coach has met with the referred student, and again when the student has met the prescribed corrective actions, the coach will update the Early Alert System so that the instructor is kept informed of the progress in resolving issues.

Behavioral Review Team

At South Arkansas Community College (SouthArk), we are committed to proactive leadership in student wellbeing and campus safety. By focusing on prevention and early intervention with campus situations that involve any person

experiencing distress or engaging in harmful or disruptive behaviors, the BRT will serve as the coordinating hub of existing resources to develop intervention and support strategies and offer case management. Students, faculty, staff, and campus guests are encouraged to report any person on campus who is a concern. BRT Contact: 870.875.7262
BRT@southark.edu

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