MAT 111

College Trigonometry

Course Description
This course includes the following topics: trigonometric functions; trigonometric identities; solution of right and oblique triangles; solution of trigonometric equations; polar coordinators; complex numbers, including DeMoivre’s Theorem; vectors; conic sections; and parametric equations.

Prerequisite: MAT 110.

3.0 Cr (3 lect/pres, 0 lab, 0 other)

Course Focus
Upon completion of MAT 111, the student should be able to:
1. Use radians and degrees to measure angles.
2. Define the six principal trigonometric ratios.
3. Determine the six trigonometric ratios for 30-60-90, 45-45-90, and other right triangles.
4. Solve right triangles and related applications.
5. Sketch angles in standard position and use reference angles to determine trigonometric functions.
6. Use radian measure to discuss arc length, sector area, linear and angular speed.
7. Graph the sine, cosine, tangent, reciprocal and inverse functions.
8. Use identities including sum and difference and half-angle identities to simplify expressions.
9. Use the law of Sines & Law of Cosines to solve triangles.
10. Use vectors to deal with quantities that require the Law for Magnitude and Direction.
11. Identify, simplify, and operate with complex numbers and their corresponding trigonometric form.
12. Use and graph polar coordinates.
13. Use exponential and logarithmic functions and appropriate applications.
14. Graph conic sections
15. Find terms in series & sequences.
MAT 111 CORE CURRICULUM COMPETENCIES

All courses approved for the general education core curriculum help students develop communication skills and/or critical thinking.

This course develops communication skills, as demonstrated by the following:
- Define the six principal trigonometric ratios.
- Identify, simplify, and operate with complex numbers and their corresponding trigonometric form.
- Graph conic sections.
- Graph the sine, cosine, tangent, reciprocal and inverse functions.
- Process problems using the law of sines and law of cosines.

This course develops critical thinking skills, as demonstrated by the following:
- Solve right triangles and related applications.
- Use exponential and logarithmic functions and appropriate applications.
- Find terms in series & sequences.
- Categorize positive and negative angles that are co-terminal.
- Solving problems involving vectors.

Course Goals
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (*designates a CRUCIAL goal)

1. Calculate exact angles
   2. Compose trig functions
   3. Find function values *
   4. Find trig functions
   5. Solve right triangles *
   6. Categorize positive and negative angles that are co-terminal *
   7. Compute complementary and supplementary angles
   8. Compute reference angles
   9. Sketch angle in standard position
   10. Convert decimals to degrees
   11. Convert radians to degrees
   12. Transfer degrees to decimals
   13. Transfer degrees to radians
   14. Determining sign of trig functions
   15. Discover coordinates of origin reflection
   16. Discover coordinates of x - axis reflection
17. Discover coordinates of y-axis reflection
18. Sketch the unit circle
19. Describe period of a function
20. Determine amplitude of a function *
21. Determine phase shift of a function *
22. Simplify trig identities
23. Utilize sum and difference identities *
24. Apply half and double angle identities *
25. Prove trig identities *
26. Compose inverses of trig functions *
27. Compose solutions in radians and degrees
28. Finding acute angles
29. Solve trig equations *
30. Process problems using the law of sines *
31. Process problems using the law of cosines *
32. Apply basic operations to complex numbers
33. Graph complex numbers
34. Change rectangular to polar coordinates *
35. Change rectangular to polar equations
36. Graph polar coordinates *
37. Transform polar to rectangular equation *
38. Determine equivalence of vectors
39. Solving problems involving vectors *
40. Finding sums of vectors
41. Sketch vectors

Student Contributions
MATERIALS NEEDED: Graphing Calculator (TI-83/84 preferred), Grid paper.

Course Evaluation
Evaluation for this course will come from 3 components: Homework, Unit Tests, and the Final Exam.

Students must earn a minimum score of 70% to pass this course and continue with his/her math sequence.

Current grade for this course can be found on the Course Compass website under your login.

The grade scale is as follows:
90 - 100 = A
80 - 89 = B
70 - 79 = C
60 - 69 = D
Below 60 = F

Course Schedule
The class meets for 3 lecture/presentation hours per week.
ADA STATEMENT
The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.

ACADEMIC MISCONDUCT
There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.

It is the student’s responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification.

The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the TCL Student Handbook, the Division Office, and the Learning Resources Center.

ATTENDANCE
The College’s statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.

- Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
- Students taking an online/internet class must sign in and communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
- Reinstatement requires the signature of the division dean.
- In the event it becomes necessary for a student to withdraw from the course OR if a student stops attending class, it is the student’s responsibility to initiate and complete the necessary paperwork. Withdrawing from class may have consequences associated with financial aid and time to completion.
- When a student exceeds the allowed absences, the student is in violation of the attendance policy. The instructor MUST withdrawal the student with a grade of “W”, “WP”, or “WF” depending on the date the student exceeded the allowed absences and the student’s progress up to the last date of attendance or under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.
  - Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.
  - A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.
  - A copy of TCL’s STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL) is on file in the Division Office and in the Learning Resources Center.
HAZARDOUS WEATHER
In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCO 98.3, WGZO 103.1, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVI 101.1, WSOK 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WIJW TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)

EMERGENCY TEXT MESSAGE ALERT
Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. Participants receive immediate notification of emergency events and weather cancellations via text messaging on their cell phones. Participants can also opt in to receive non-emergency news and announcements. Go to [www.tcl.edu](http://www.tcl.edu). On the homepage, click on “emergency TextAlert at TCL” and fill out the form or go to [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)

GRADING METHODOLOGY
The final grade must be 70 or more in order to pass the course and progress in the program. Students absent from an examination or presentation will receive a “0” grade for the examination unless other arrangements are made with the individual instructor prior to the examination or presentation day or on the examination or presentation day before the test/presentation is scheduled to be given.

The student is responsible for notifying the instructor for the reason of the absence. It is also the responsibility of the student to contact the appropriate instructor to arrange to make up the examination. Arrangements may be completed by telephone.

If the instructor is not available, a message should be left on the instructor’s voice mail AND with another member of the faculty or administrative assistant. The make-up exam will be scheduled and the instructor will decide the method of examination. Messages sent by other students are unacceptable.