PRECALCULUS TRIGONOMETRY
MATH 1720

Class Hours: 3.0   **Credit Hours: 3.0**

Laboratory Hours: 0.0   **Revised: Spring 2011**

Catalog Course Description:

Precalculus trigonometry for students in University Parallel/Transfer Programs of science, mathematics, engineering or computer science. This is the second of two courses in a sequence that prepares students for Calculus I. Topics include the unit circle, right triangle trigonometry, graphs of trigonometric functions, inverse trigonometric functions, verifying trigonometric identities, solving trigonometric equations, law of sines, law of cosines and vectors.

Entry Level Standards:

Students must be able to read at the college level.

Prerequisites:

MATH 1710 or consent of mathematics department.

Textbook(s) and Other Reference Materials Basic to the Course:

Textbook:
Blitzer, Robert F. Precalculus Essentials. 3rd edition. Upper Saddle River, NJ: Pearson Prentice Hall, 2010.

References:

Algebra and Trigonometry with Analytic Geometry, 12th edition, Swokowski/Cole, Cengage; Algebra and Trigonometry, 2nd Edition, Stewart/Redlin/Watson, Cengage.

Personal Equipment:
A graphics calculator is required; the TI-83, TI-83 Plus, TI-84, or TI-84 Plus is recommended. A symbolic manipulator such as the TI-89 or TI-92 is not permitted.

I. Week/Unit/Topic Basis:

Week	Topic
1	Introduction, Review of functions, Angles and radian measure. 4.1
2	Trigonometric functions, the Unit circle. 4.2
3	Right triangle trigonometry, Trigonometric functions of any angle. 4.3-4.4
4	Review, Test 1, graphs of sine and cosine functions. 4.5
5	Graphs of other trigonometric functions, inverse trigonometric functions. 4.6-4.7
6	Applications of trigonometric functions. 4.8
7	Review, Test 2; Verifying trigonometric identities. 5.1

8	Sum and difference formulas, Double angle, Power reducing, Half-angle formulas. 5.2-5.3
9	Trigonometric equations; 5.5
10	Review, Test 3, Law of sines. 6.1
11	Law of cosines, Polar coordinates. 6.2-6.3
12	Graphs of polar equations, Complex numbers in polar form, Demoivre's Theorem. 6.4-6.5
13	Vectors, Dot product. 6.6-6.7
14	Review, Test 4; Review for final exam
15	Final Exam

II. Course Objectives*:

A. Build the algebraic, geometric, and trigonometric manipulation skills necessary for success in the engineering technologies and transfer programs. VI.1,2,3

B. Use function notation and concepts for evaluating algebraic/ trigonometric functions and interpreting the results. VI.1,2,3

C. Illustrate techniques for interpreting algebraic/ trigonometric graphs and demonstrate how they relate to other disciplines. VI.1,2,3,4

D. Look at technology as a tool for analyzing data, graphs, and solutions to enhance understanding of algebraic/trigonometric concepts and determining if solutions are reasonable. VI. 2,3,4,5,6

E. Develop the problem solving skills for solving real world applications that require the use of trigonometric equations for a wide-range of disciplines with emphasis on the sciences and engineering. VI.3,4,5,6

*Roman numerals after course objectives reference goals of the Mathematics program (Career Program Goals and General Education Goals are listed
http://www.pstcc.edu/departments/curriculum_and_instruction/syllabi/)

III. Expected Student Learning Outcomes:

The student should be able to:

1. Define and use the six trigonometric ratios. A

2. Apply the trigonometric ratios to right triangle problems from geometry and technology. A,D, E

3. Determine the trigonometric and inverse trigonometric functional values for any angle measured in degrees or radians. A, B, C. D

4. Apply radian measure to geometry and technology. A, C, D

5. Add vectors geometrically and algebraically. A, D, E

6. Use the law of sines and cosines to solve oblique triangles. A, D, E

7. Sketch sine and cosine graphs, noting the amplitude, period and horizontal   displacement. A, C

8. Convert between polar and rectangular forms of complex numbers. A

9. Prove trigonometric identities by using the fundamental, double-angle, sum,

and   difference identities. A

10.   Solve conditional trigonometric equations by using identities. A

11.   Graph polar equations using symmetry and point plotting in the polar coordinate system. C

*Letters after performance expectations reference the course objectives listed above.

IV. Evaluation:

A. Testing Procedures:

Students are evaluated primarily on the basis of tests, quizzes, homework, and/or a comprehensive final exam. A minimum of 4 major tests, in addition to the final, is recommended.

B. Laboratory Expectations:

None

C. Field Work:

None

D. Other Evaluation Methods:

None

E. Grading Scale:

93 - 100	A
88 - 92	B+
83 - 87	B
78 - 82	C+
70 - 77	C
60 - 69	D
Below 60	F

V. Policies:

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of the Learning Division, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of the Learning Division.

B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:
• Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
• Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services,

without proper documentation of the original source.
• Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
• Taking an exam for another student.
• Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
• Any of the above occurring within the Web or distance learning environment.

C. Accommodations for Disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at www.pstcc.edu/departments/swd/.

D. Other Policies:

Make Up Work:
Instructor discretion about make-up tests and/or assignments.

Cell Phones:
Cell phones are to be either turned off or put on vibration mode while in class. Instructor discretion as to penalty.