PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS

PRECALCULUS
MATH 1730

Class Hours: 5.0 **Credit Hours: 5.0**

Laboratory Hours: 0.0 **Date Revised: Fall 2017**

Catalog Course Description

Precalculus for students in the University Parallel/College transfer Programs of science, mathematics, engineering or computer science. This course prepares students for Calculus I. Review of algebraic, trigonometric, logarithmic and exponential functions for students with a previous Precalculus/trigonometry course. All topics in MATH 1710 and MATH 1720 will be covered in this course. MATH 1710 followed by MATH 1720 is recommended for students with an ACT math score below 23 with no previous precalculus/trigonometry course.

Prerequisite(s)

High school algebra I and algebra II and precalculus/trigonometry and ACT math score of at least 23, or MATH 1030, or equivalent course and ACT reading score of at least 19 or equivalent reading score

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

Textbook

Stewart/Redlin/Watson Precalculus: Mathematics for Calculus. 7th edition. Cengage Learning, 2017

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, or Ti-84 Plus is recommended. A symbolic manipulator such as the TI-89 or TI-92 is not permitted.

Weekly Topics

Week	Topics
1	Distance, midpoint and circles, Introduction to functions. 1.9, 2.1 – 2.2
2	Graphs of functions, average rate of change, linear functions and transformations, 2.3 – 2.6
3	Transformations, 2.6, Test 1, Complex numbers, 1.6 and quadratic functions, 3.1
4	Polynomial functions, polynomial division, finding polynomial zeros, 3.2 – 3.5
5	Rational Functions, Nonlinear inequalities, 3.6 – 3.7, Test 2
6	Function Composition, inverse functions, exponential and logarithmic functions, 2.7, 2.8, 4.1 – 4.3
7	Exponential and logarithmic functions, properties and equations. 4.4 – 4.6
8	Applications and modeling with exponential and logarithmic functions, 4.6, Test 3, Angle Measure 6.1
9	Right triangle trigonometry, Trigonometric functions of any angle, Unit Circle, 6.2 – 6.4, 5.1, 5.2
10	Trigonometric Graphing, 5.3, 5.4, Test 4
11	Inverse Trigonometric Functions, Harmonic Motion, Trigonometric Identities, 5.5, 5.6, 7.1
12	Double Angle, sum, difference, and other formulas, 7.2 – 7.3, Trigonometric Equations, 7.4 – 7.5
13	Test 5, Law of Sines and Law of Cosines, 6.5 – 6.6, Vectors 9.1,
14	Polar Coordinates and DeMoivre's Theorem, 8.1 – 8.3, Test 6
15	Final Exam

Course Goals

NOTE: Roman numerals after course goals reference the General Education Goals of the Mathematics program.

The course will

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 algebraic/trigonometric equations for a wide-range of disciplines with emphasis on the sciences and engineering. VI.3,4,5,6

Expected Student Learning Outcomes

NOTE: Capital letters after Expected Student Learning Outcomes reference the course goals listed above.

The student will

1. Compute areas and volumes of simple geometric figures and solids. A
2. Solve elementary algebraic equations and literal formulas. A
3. Translate verbal situations into algebraic or trigonometric equations by using appropriate problem-solving techniques. E
4. Interpret, graph, and manipulate polynomial and rational functions. B, C, D
5. Solve equations algebraically, numerically and graphically. A, B, C, D
6. Define and use the six trigonometric rations. A
7. Apply the trigonometric ratios to the right triangle problems from geometry and technology. A, D, E
8. Model data mathematically. D
9. Solve fractional and quadratic equations and applications. A, E
10. Determine trigonometric and inverse trigonometric functional values for any angle measured in degrees and radians. A, B, C, D
11. Apply radian measure to geometry and technology. A, C, D
12. Add vectors geometrically and algebraically. A, D, E
13. Use law of sines and cosines to solve oblique triangles. A, D, E
14. Sketch sine and cosine graphs, noting the amplitude, period, and horizontal displacement. A, C
15. Simplify rational exponential expressions and convert to radical equivalent. A
16. Convert from exponential to logarithmic form and vice versa. A

17. Solve exponential and logarithmic equations and work problems. A, E

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

19. Solve equations involving complex numbers. A

20. Solve radical equations. A

21. Prove trigonometric identities by using the fundamental and double-angle identities. A

22. Solve conditional trigonometric equations using identities. A

Evaluation

Testing Procedures

Students are evaluated primarily on the basis of tests, quizzes and homework. A minimum of 5 major tests is recommended.

Laboratory Expectations

As assigned by instructor

Field Work

As assigned by instructor

Other Evaluation Methods

As assigned by instructor

Grading Scale

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

Policies

Attendance Policy

The Pellissippi State Mathematics Department 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.

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.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities

Students that 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 Disability Services (DS) in order to receive accommodations in this course. Disability Services (www.pstcc.edu/sswd/) may be contacted via Disability Services email or by visiting Alexander 130.

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.