

Bossier Parish Community College Master Syllabus

Course Prefix & Number: MATH 113

Credit Hours: 6-6-0

Course Title: Algebra and Trigonometry

Course Prerequisites: ACT score of 26 or higher, acceptable placement test score, or grade of “B” or higher in MATH 099

Textbook(s): Sullivan and Sullivan. Precalculus, 11th edition. Pearson, 2020. ISBN: 9780135962039

Course Description: A combined course on function properties and graphs; inverse functions; linear, quadratic, polynomial, rational, exponential and logarithmic functions with applications; systems of equations; trigonometric functions and graphs; inverse trigonometric functions; fundamental identities and angle formulas; solving equations; the polar coordinate system; and vectors. For qualified students, this course serves as a replacement for MATH 102 and MATH 112 as a preparation for MATH 250. Credit will be given for either MATH 102 and MATH 112 or for MATH 113. [CMAT 1236/Algebra and Trigonometry]

Learning Outcomes:

At the end of this course, the student will:

- A. Apply basic algebra skills;
- B. Solve and graph common functions and equations;
- C. Define and use trigonometric functions;
- D. Evaluate inverse trigonometric functions and solve trigonometric equations;
- E. Recognize polar coordinates and vectors and use them to draw graphs and points;
- F. Recognize conic sections and their graphs;
- G. Solve systems of equations and inequalities;

To achieve the learning outcomes, the student will or will be able to:

(The letter designations at the end of each statement refer to the learning outcome(s).)

1. Factor polynomials; (A)
2. Solve linear equations and inequalities; (A)
3. Perform operations with complex numbers; (A)
4. Solve quadratic equations and inequalities; (A)
5. Identify and graph basic families of functions; (B)
6. Identify the standard and general forms of a circle and graph it; (B)
7. Use transformations to graph functions; (B)
8. Determine whether a relation is a function; (B)
9. Use function notation; (B)
10. Identify properties of functions such as intervals of increasing/decreasing and even/odd; (B)
11. Handle compositions and inverses of functions; (B)
12. Find domain, range, intercepts, and other basic information about a function and its graph; (B)
13. Model and solve problems using logarithms and exponentials; (B)
14. Recognize that logarithms and exponentials are inverse functions; (B)
15. Demonstrate knowledge of basic terminology related to angles; (C)
16. Use the unit circle to define and evaluate trigonometric functions; (C)
17. Demonstrate knowledge of various trigonometric properties; (C)

18. Graph the trigonometric functions and their transformations; (C)
19. Define and evaluate inverse trigonometric functions; (D)
20. Use trigonometric identities to simplify expressions and evaluate trigonometric functions; (D)
21. Verify and provide informal proofs for various trigonometric identities; (D)
22. Define polar coordinates and convert between polar and Cartesian coordinates; (E)
23. Understand the polar form of complex numbers; (E)
24. Differentiate between the circle, ellipse, hyperbola, and parabola using equations; (F)
25. Describe foci, vertices, center, and directrix; (F)
26. Graph the conic sections; (F)
27. Solve a system of linear equations in two or three variables; (G)
28. Solve a nonlinear system of equations; (G)
29. Solve a linear and nonlinear system of inequalities by graphing; (G) and
30. Use matrices to solve linear systems; (G)

Course Requirements: All students are required to take a comprehensive final exam. When this course is taken in an online environment, the department has established a minimum grade of 60% on the final exam required to earn a grade of “C” or higher in the course. If this minimum score is not obtained by the student, then the student shall refer to the policy outlined in the course syllabus which will supersede the course grading scale shown below.

Course Grading Scale:

- 90 – 100 = A
- 80 – 89 = B
- 70 – 79 = C
- 60 – 69 = D
- 0 – 59 = F

Attendance Policy: The college attendance policy is available in the BPCCC Student Handbook.

Course Fees: This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams and/or clinical fees.

Nondiscrimination Statement: Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

Title VI, Section 504, and ADA Information

Angie Cao, Student and Disabilities Services Specialist

Student Services, F-254

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Hours: 8:00 a.m. - 4:30 p.m. Monday - Friday, excluding holidays and weekends.

Equity/Compliance Coordinator

Teri Bashara, Director of Human Resources

Human Resources Office, A-105

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