

SYLLABUS

DATE OF LAST REVIEW:	12/2019
CIP CODE:	24.0101
SEMESTER:	Departmental Syllabus
COURSE TITLE:	Pre-Calculus Mathematics
COURSE NUMBER:	MATH0108
CREDIT HOURS:	5
INSTRUCTOR:	Departmental Syllabus
OFFICE LOCATION:	Departmental Syllabus
OFFICE HOURS:	Departmental Syllabus
TELEPHONE:	Departmental Syllabus
EMAIL:	Departmental Syllabus <i>KCKCC-issued email accounts are the official means for electronically communicating with our students.</i>

PREREQUISITES: Students need to meet the correct placement measure for this course or have completed MATH0104 Intermediate Algebra with a grade of “C” or better.

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, <http://www.kckccbookstore.com> for the required text for your particular class.

COURSE DESCRIPTION: Pre-Calculus includes the analysis and graphing of functions, including constant, linear, absolute value, square root, polynomial, rational, exponential and logarithmic functions, non-functions and trigonometric functions; solving equations and inequalities, including polynomial equations, exponential equations, logarithmic equations, trigonometric equations, systems of linear equations and inequalities; trigonometric and inverse trigonometric functions, radian and degree measure, identities, and applications to physical problems; conic sections; and sequences and series. A graphing calculator is required for this course.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

EXPECTED LEARNER OUTCOMES:

- A. The student will be able to graph and model using functions.

- B. The student will be able to find zeros of functions and solutions of equations.
- C. The student will be able to graph functions and solve equations (polynomial and rational).
- D. The student will be able to graph functions and solve equations (exponential and logarithmic).
- E. The student will be able to define trigonometric functions.
- F. The student will be able to solve right triangles.
- G. The student will be able to use radian measurement and circular functions.
- H. The student will be able to analyze trigonometric graphs.
- I. The student will be able to verify trigonometric identities.
- J. The student will be able to use inverse trigonometric functions.
- K. The student will be able to solve trigonometric equations.
- L. The student will be able to solve oblique triangles.
- M. The student will be able to solve trigonometric applications.
- N. The student will be able to solve systems of equations.
- O. The student will be able to graph and find equations for the conic sections.
- P. The student will be able to use sequences and series.

COURSE COMPETENCIES:

Upon successful completion of the course:

The student will be able to graph and model using functions.

1. The student will be able to find the domain, range, intercepts, and relative extrema of a function.
2. The student will be able to fit a regression line to a set of data; then use the linear model to make predictions.
3. The student will be able to determine whether a graph is symmetric.
4. The student will be able to graph the transformation of a function.
5. The student will be able to compute function values for the sum, the difference, the product, and the quotient of two functions, and determine the domains.
6. The student will be able to find equations of direct, inverse, and combined variation.

The student will be able to find zeros of functions and solutions of equations.

- The student will be able to find zeros of linear functions and solve linear equations.
8. The student will be able to solve applied problems using linear models.
 9. The student will be able to solve quadratic equations by completing the square and using the quadratic formula.
 10. The student will be able to find zeros of rational and radical functions and solve rational and radical equations.
 11. The student will be able to find zeros of absolute value functions and solve absolute value equations.
 12. The student will be able to solve linear inequalities using interval notation to express solution sets.

The student will be able to graph functions and solve equations (polynomial and rational).

13. The student will be able to graph a polynomial function.
14. The student will be able to solve applied problems using polynomial models.
15. The student will be able to graph a rational function.
16. The student will be able to solve applications involving rational functions.

17. The student will be able to solve polynomial and rational inequalities.
The student will be able to graph functions and solve equations (exponential and logarithmic).
18. The student will be able to determine whether a function is one-to-one and find a formula for its inverse.
19. The student will be able to graph exponential equations and functions.
20. The student will be able to graph logarithmic functions.
21. The student will be able to solve exponential and logarithmic equations.
22. The student will be able to solve applications involving exponential and logarithmic functions and their graphs.

The student will be able to define trigonometric functions.

23. The student will be able to define trigonometric functions using the right triangle.
24. The student will be able to define trigonometric functions using the unit circle.

The student will be able to solve right triangles.

25. The student will be able to use 30 degree angles.
26. The student will be able to use 45 degree angles.
27. The student will be able to use 60 degree angles.

The student will be able to use radian measurement and circular functions.

28. The student will be able to define a radian measure.
- The student will be able to use circular functions.

The student will be able to analyze trigonometric graphs.

30. The student will be able to analyze graphs using the sine, cosine, and tangent functions.
31. The student will be able to analyze graphs using the secant, cosecant, and cotangent functions.

The student will be able to verify trigonometric identities.

32. The student will be able to verify the double angle and the half angle identities.
33. The student will be able to verify the angle sum and the angle difference identities.

The student will be able to use inverse trigonometric functions.

34. The student will be able to graph inverse trigonometric functions.
35. The student will be able to analyze inverse trigonometric functions.

The student will be able to solve trigonometric equations.

36. The student will be able to solve equations using sine, cosine and tangent functions.
37. The student will be able to solve equations using secant, cosecant and cotangent functions.

The student will be able to solve oblique triangles.

38. The student will be able to use the Law of Cosines.
39. The student will be able to use the Law of Sines.

The student will be able to solve trigonometric applications.

40. The student will be able to solve distance applications.
41. The student will be able to solve elevation applications.

The student will be able to solve systems of equations.

42. The student will be able to solve a system of two linear equations in two variables using substitution, elimination, and graphing.
43. The student will be able to solve systems of equations using matrices.

- The student will be able to graph and find equations for the conic sections.*
44. The student will be able to find the vertex, the focus, and directrix and graph a parabola given its equation.
 45. The student will be able to find the center, the vertices, and the foci and graph an ellipse given its equation.
 46. The student will be able to find the center, the vertices, and foci and graph a hyperbola given its equation.

The student will be able to use with sequences and series.

47. The student will be able to, for any arithmetic sequence, find the n th term when n is given and n when the n th term is given, and given two terms, find the common difference and construct the sequence.
48. The student will be able to identify the common ratio of a geometric sequence, and find a given term and the sum of the first n terms.

ASSESSMENT OF LEARNER OUTCOMES:

Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

SPECIAL NOTES:

Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student's progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

STATEMENTS ON NON-DISCRIMINATION, HARASSMENT AND VIOLENCE, AND EDUCATIONAL EQUALITY

Non-Discrimination Policy Statement

Kansas City Kansas Community College is committed to promoting and sustaining a campus community which identifies and values the individuality of every community member and is dedicated to maintaining a positive environment where diversity is encouraged and fostered throughout the college. KCKCC strongly believes that diversity generates a positive image and awareness and community strength that encourages active involvement and helps enhance organizational effectiveness and culture. KCKCC prohibits discrimination on the basis of race, religion, color, sex (including pregnancy, gender identity, and sexual orientation), parental status, national origin, age, disability, family medical history or genetic information, political affiliation, military service, or other non-merit based factors. All college actions and policies comply with all state, federal and local laws and regulations.

Harassment and Violence Statement

Kansas City Kansas Community College is committed to providing a non-discriminatory and harassment-free educational, living and working environment for all members of the campus community, including students, faculty, administrators, staff, trustees or visitors. This policy prohibits all forms of sexual or gender-based harassment and sexual assault.

Title IX, regulated by the Office of Civil Rights, prohibits discrimination on the basis of sex in federally funded education programs and activities. All schools who receive any federal financial assistance must comply with Title IX.

Deputy Title IX Coordinator: Sean Burkett, Employee Relations Manager, sburkett@kckcc.edu or 913-288-7269, 7250 State Avenue, Kansas City, Kansas 66112.

Educational Equality Statement

Kansas City Kansas Community College is committed to a policy of educational equity. Accordingly, the College admits students, grants financial aid and scholarships, and conducts all educational programs, activities, and employment without regard to race, color, creed, religion, sex, national origin, age, sexual orientation, marital status, ancestry, veteran status, or disabilities.

Any person having inquiries concerning College compliance with regulations Implementing Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, or the American with Disabilities Act of 1990, is directed to contact Human Resources, Kansas City Kansas Community College, 7250 State Avenue, Kansas City, Kansas 66112, Telephone (913) 288-7646.

Any person needing access to academic programs or college activities due to a documented disability is directed to contact the Student Accessibility and Support Services, 913-288-7664 for accommodations.

More information on these statements and additional resources are available through the links below.

<http://www.kckcc.edu/footer/statements>

<http://www.kckcc.edu/services/reporting/titleix>

<http://www.hhs.gov/ocr/office/file>