NEW RIVER COMMUNITY COLLEGE
DUBLIN, VIRGINIA

COURSE PLAN

Course Number and Title: <u> MTH 166 Precalculus with Trigonometry </u>

Prepared by: <u> Mathematics Department </u> <u> Fall, 2013 </u>
                                                                                                (Date)

Approved by: <u>   </u> <u> Fall, 2013 </u>
                          (Interim Dean)   (Date)

I.   <u>Course Description</u>

Presents college algebra, analytic geometry, trigonometry, and algebraic exponential, and logarithmic functions. Prerequisit: a placement recommendation for MTH 166 and Algebra I, Algebra II, and Geometry or equivalent. (Credit will not be awarded for both MTH 163 and MTH 166.) Lecture 5 hours per week.

II.   <u>Introduction</u>

The course satisfies a mathematics requirement for many degree programs. The course is designed to develop the skills and concepts which are needed for Calculus of One Variable and other advanced mathematics courses in engineering and mathematics related fields. It does not count toward a degree in engineering.

III.   <u>Student Learning Outcomes</u>

Upon successful completion of this course, the student will be able to:

1.   Work with integral and rational exponents.
2.   Work with radicals.
3.   Simplify algebraic expressions.
4.   Work with algebraic expressions.
5.   Solve linear inequalities.
6.   Be familiar with interval notation.
7.   Solve linear equations and applications involving linear equations.
8.   Solve absolute value equations and inequalities.
9.   Solve non-linear inequalities. (polynomial and rational)
10.   Solve quadratic equations.
11.   Solve equations which are reducible to quadratic form.
12.   Sketch the graph of linear equations.
13.   Sketch the graph of polynomial equations.
14.   Sketch the graph of rational equations.
15.   Define relation and function.
16.   Determine the domain and range of a function.
17.   Evaluate functions.
18.   Find the inverse of a one-to-one function.

19. Apply functions.
20. Determine zeros of polynomial functions using synthetic division and rational zeros theorem.
21. Work with composition of functions.
22. Approximate real zeros of a polynomial function.
23. Identify exponential functions.
24. Apply exponential functions.
25. Convert exponential equations to and from logarithmic equations.
26. Solve exponential equations.
27. Solve logarithmic equations.
28. Solve systems of equations using Gauss-Jordan Elimination.
29. Solve systems of equations involving second-degree equations
30. Perform matrix addition.
31. Perform scalar multiplication of matrices.
32. Perform matrix multiplication.
33. Find the inverse of a square matrix.
34. Use matrix equations to solve systems of equations.
35. Identify the parts of a parabola.
36. Sketch the graph of a parabola.
37. Find the equations of a parabola, given conditions.
38. Identify the parts of an ellipse.
39. Sketch the graph of an ellipse.
40. Find the equations of an ellipse, given conditions.
41. Identify the parts of a hyperbola.
42. Sketch the graph of a hyperbola.
43. Find the equations of a hyperbola, given conditions
44. Perform translation of axes for conics.
45. Use degree and radian units to measure angles.
46. Place an angle in standard position on the axes.
47. Determine the reference angle for an angle in standard position.
48. Define the trigonometric functions.
49. Evaluate the trigonometric functional values for an angle in standard position.
50. Apply the inverse trigonometric functions to solve for particular angles.
51. Define the circular functions.
52. Graph the trigonometric functions.
53. Solve trigonometric equations.
54. Prove trigonometric identities
55. Use the law of sines to solve problems
56. Use the law of cosines to solve problems

IV.   Instructional Methods

The instructional procedures will include lectures, discussions, problem sessions, in class work, homework, reviews and tests.

V.   Instructional Materials

Textbook: <u>Calculus I with Precalculus: A One-Year Course.</u> 3/e 2012
Larson, Hostetler, and Edwards.
ISBN 978-0-8400-6833-0

Software: Enhanced WebAssign

Calculator: Students are allowed to use a TI 30XIIS or equivalent.

Other: Pencils and paper. Ink is not to be used for any graded work

VI.   Course Content

- Functions and their graphs
- Polynomial and rational functions
- Exponential functions
- Logarithmic functions
- Conic sections
- Systems of equations
- Matrices
- Trigonometric Functions
- Analytic Geometry

VII.   Evaluation

The grade for the course will be calculated from Tests, WebAssign homework, a final exam and other work as deemed appropriate by the instructor. See individual syllabus for details on percentages/points.

VIII. Attendance

Regular attendance at classes is required. When absence from a class becomes necessary, it is the responsibility of the student to inform the instructor prior to the absence whenever possible. The student is responsible for the subsequent completion of all study missed during an absence. Any instruction missed and not subsequently completed will necessarily affect the grade of the student regardless of the reason for the absence.

IX.   Cheating Policy

The giving or receiving of any help from another student or unauthorized individual on any graded portion of the course is considered cheating and will not be tolerated. The use of books, notes, electronic devices of any other unauthorized material during tests is considered cheating, and will not be tolerated. Any student found cheating will receive a grade of "0" on that assignment and may receive an "F" for the course. This "0" cannot be replaced by any other score. Mobile phones are not permitted to be used as calculators.

X.   Withdrawal Policy

Student Initiated Withdrawal Policy

A student may drop or withdraw from a class without academic penalty during the first 60 percent of a session. For purposes of enrollment reporting, the following procedures apply:

a.   If a student withdraws from a class prior to the termination of the add/drop period for the session, the student will be removed from the class roll and no grade will be awarded.

b.   After the add/drop period, but prior to completion of 60 percent of a session, a student who withdraws from a class will be assigned a grade of "W." A grade of "W" implies that the student was making satisfactory progress in the class at the time of withdrawal, that the withdrawal was officially made before the deadline published in the college calendar, or that the student was administratively transferred to a different program.

c.   After that time, if a student withdraws from a class, a grade of "F" or "U" will be assigned. Exceptions to this policy may be made under documented mitigating circumstances if the student was passing the course at the last date of attendance.

A retroactive grade of "W" may be awarded only if the student would have been eligible under the previously stated policy to receive a "W" on the last date of class attendance. The last date of attendance for a distance education course will be the last date that work was submitted.

Late withdrawal appeals will be reviewed and a decision made by the Director of Student Services.

No-Show Policy

A student must either attend face-to-face courses or demonstrate participation in distance learning courses by the last date to drop for a refund. A student who does not meet this deadline will be reported to the Admissions and Records Office and will be withdrawn as a no-show student. No refund will be applicable, and the student will not be allowed to attend/participate in the class or submit assignments. Failure to attend or participate in a course will adversely impact a student's financial aid award.

Instructor Initiated Withdrawal

A student who adds a class or registers after the first day of class is counted absent from all class meetings missed. Each instructor is responsible for keeping a record of student attendance (face-to-face classes) or performance/participation (DE classes) in each class throughout the semester.

When a student's absences equal twice the number of weekly meetings of a class (equivalent amount of time for summer session), the student may be dropped for unsatisfactory attendance in the class by the instructor.

Since attendance is not a valid measurement for Distance Education (DE) courses, a student may be withdrawn due to non-performance. A student should refer to his/her DE course plan for the instructor's policy.

In accordance with the No-Show Policy, a student who has not attended class or requested/accessed distance learning materials by the last day to drop the class and receive a refund must be withdrawn by the instructor during the following week. No refund will be applicable.

When an instructor withdraws a student for unsatisfactory attendance (face-to-face class) or non-performance (DE class), the last date of attendance/participation will be documented. Withdrawal must be completed within five days of a student's meeting the withdrawal criteria. A grade of "W" will be recorded during the first sixty percent (60%) period of a course. A student withdrawn after the sixty percent (60%) period will receive a grade of "F" or "U" except under documented mitigating circumstances when a letter of appeal has been submitted by the student. A copy of this documentation must be placed in the student's academic file.

The student will be notified of the withdrawal by the Admissions and Records Office. An appeal of reinstatement into the class may be approved only by the instructor.

XI. **Disability and Diversity Statements**

If you are a student with a documented disability who will require accommodation in this course, please register with the Disability Services Office located in the Counseling Center for assistance in developing a plan to address your academic needs.

The NRCC community values the pluralistic nature of our society. We recognize diversity including, but not limited to, race ethnicity, religion, culture, social class, age, gender, sexual orientation and physical or mental capability. We respect the variety of ideas, experiences and practices that such diversity entails. It is our commitment to ensure equal opportunity and to sustain a climate of civility for all who work or study at NRCC or who otherwise participate in the life of the college.