**NEW RIVER COMMUNITY COLLEGE**
**DUBLIN, VIRGINIA**

**COURSE PLAN**

Course Number and Title**:**     MTH 174 – Calculus with Analytic Geometry, Part II

Prepared by:     Math Department                              Fall, 2014
                                                                (Date)

Approved by:
                    (Dean)                                       (Date)

## I.     Course Description

Continues the study of analytic geometry and the calculus of algebraic and transcendental functions including rectangular, polar, and parametric graphing, indefinite and definite integrals, methods of integration, and power series along with applications.  Designed for mathematical, physical, and engineering science programs.

Prerequisites: Successful completion of MTH 173 or equivalent.

## II.     Introduction

This course presumes successful completion and understanding of Calculus I, and continues the study into Calculus II.

## III.     Student Learning Outcomes

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

1. Find the area of a plane region between two curves.
2. Find the moments and center of mass of a plane region.
3. Find the inverse of a function and its derivative.
4. Evaluate logarithm functions.
5. Evaluate exponential functions.
6. Find the volumes of solids using disks, slabs, and washers.
7. Find the volumes of solids using shells.
8. Find work done using integrals.
9. Evaluate the inverse of trigonometric functions.
10. Find the derivative of inverse trigonometric functions.
11. Find integrals using substitution.
12. Find integrals of trigonometric functions.
13. Evaluate integrals by rationalizing substitutions.
14. Evaluate integrals using integration by parts.
15. Evaluate integrals of rational functions.
16. Evaluate improper integrals with infinite limits.
17. Evaluate improper integrals with infinite integrands.
18. Identify and sketch conic sections.
19. Find the equations of conic sections in applications.

20.   Find the equation of conic sections when translated.
21.   Find the equation of conic sections when rotated.
22.   Translate between rectangular and polar coordinates.
23.   Sketch graphs in polar coordinates.
24.   Find derivatives and integrals in polar coordinates.
25.   Express plane curves in parametric form.
26.   Find the length of plane curves.
27.   Determine convergence/divergence of sequences.
28.   Determine the limit of a convergent sequence.
29.   Determine convergence/divergence of a series using the integral test.
30.   Determine convergence/divergence of a series using the comparison tests.
31.   Determine convergence/divergence of an alternating series.
32.   Determine absolute convergence using the ratio test.
33.   Determine power series.
34.   Represent functions as power series.
35.   Find Taylor and Maclaurin series.

## IV.   **Instructional Methods**

The instructional methods may include lectures, homework, quizzes, reviews and in class tests.  Further information is available in the Course Plan Addendum.

## V.   **Instructional Materials**

**Textbook**:   Calculus: Early Transcendentals, 7th Edition
James Stewart  Brooks/Cole, 2012
ISBN-10: 0538497904 |  ISBN-13: 9780538497909

**WebAssign:**   Enhanced WebAssign homework delivery system
bundled with the textbook if purchased through the NRCC Bookstore
to be purchased separately if a used book is purchased.

**Calculator:**   See instructor specific requirements.
Cell phones may not be used as calculators.

## VI.   **Course Content**

- Methods of integration
- Indefinite integrals
- Definite integrals
- Applications of integration
- Polar coordinates
- Parametric curves
- Sequences and Series

**VII.** <u>**Evaluation**</u>

The grade for the course will be calculated from Homework, Quizzes and Tests. See the Course Plan Addendum for details.

**VIII.** <u>**Attendance**</u>

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.** <u>**Cheating Policy**</u>

It is expected that all work completed in this course is the result of effort by the student registered in the course. If it is determined that the student registered for the course has cheated by obtaining unauthorized assistance on any of the graded components of the course, the student will receive an "F" for the course.

**X.** <u>**Withdrawal Policy**</u>

<u>**Student Initiated Withdrawal Policy**</u>

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.