NEW RIVER COMMUNITY COLLEGE
DUBLIN, VIRGINIA

COURSE PLAN

Course Number and Title**:** MTH 264 – Calculus II

Prepared by: Math Department — Fall 2023 (Date)

Approved by: S. Tolbert-Hungoz (Dean) — Fall 2023 (Date)

I. Course Description

Continues the study of 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. This is a UCGS transfer course. Prerequisites: Completion of MTH 263: Calculus I or equivalent with a grade of C or better. Lecture 4 hours per week.

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:

A. Applications of Integration
   a. Compute Volumes by cross-section
   b. Compute Volumes by disk-washer
   c. Compute Volumes by shells
   d. Compute Work (spring, rope)
   e. Compute Work (pumping liquids)
   f. Compute Arc length
   g. Compute Areas of surfaces of revolution
   h. Compute Application (center of mass)

B. Techniques of Integration
   a. Integrate by parts
   b. Calculate trigonometric integrals
   c. Calculate integrals by trigonometric substitution
   d. Define the indeterminate form and apply L'Hopital's Rule.
   e. Calculate improper integrals
   f. Integrate by partial fractions
   g. Integrate using Tables and Software
   h. Approximate integrals (Trapezoidal, Simpson) with error estimation.

C. Infinite Sequences and Series

a. Write definition of and understand Sequences
b. Write definition of and understand Series (intro)
c. Determine convergence by integral test
d. Determine convergence by comparison test
e. Determine convergence of alternating series
f. Determine absolute convergence (ratio, root tests)
g. Apply strategies for testing series
h. Work with power series
i. Represent functions as power series
j. Find Taylor, Maclaurin series & polynomials
k. Calculate Taylor and Maclaurin series

D. Parametric Curves and Polar Coordinates
a. Represent curves by parametric equations
b. Perform calculus with parametric curves
c. Use and graph with polar system
d. Calculate areas and lengths in polar coordinates
e. Define the conic forms in polar form

IV. General Education Student Learning Outcomes Included in Course

General education at NRCC provides the educational foundation necessary to promote intellectual and personal development. Upon completing the associate degree, graduates will demonstrate competency in student learning outcomes in 1) civic engagement, 2) critical thinking, 3) professional readiness, 4) quantitative literacy, 5) scientific literacy, and 6) written communication.

This course includes the following general education student learning outcomes:

- Identify the problem or complex issue and its various parts.
- Explain numerical information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
- Convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words).
- Accurately solve mathematical problems.
- Make judgements and draw relevant conclusions from quantitative analysis of data and predict future trends when appropriate.
- Demonstrate appropriate workplace and classroom demeanor and behavior e.g., attendance (for online classes this means regular engagement), submissions of assignments by set deadlines and appropriate dress.

V. Instructional Methods

The instructional procedures may include lectures, discussions, in-class work, homework, and tests. Further information is available in the Course Syllabus.

VI. Instructional Materials

Textbook: Calculus 2 Openstax.
Calculator: See instructor specific requirements. No symbolic/menu driven calculators. Cell phones may not be used as calculators.
Software: MyOpenMath https://www.myopenmath.com/

VII. Course Content

- Methods of integration
- Indefinite integrals
- Definite integrals
- Applications of integration
- L'Hopital's rule
- Polar coordinates
- Parametric curves
- Sequences and Series

VIII. 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 instructor syllabus for details on percentages/points.

IX. 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.

X. Cheating Policy

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.

XI. 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 Coordinator Admissions and Records.

No-Show Policy

A student must either attend face-to-face courses or demonstrate participation in online 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 (online 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 online courses, a student may be withdrawn due to non-performance. A student should refer to his/her online course plan for the instructor's policy.

When an instructor withdraws a student for unsatisfactory attendance (face-to-face class) or non-performance (online 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.

XII. Disability and Non-Discrimination 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 Advising Center for assistance in developing a plan to address your academic needs.

This College promotes and maintains educational opportunities without regard to race, color, national origin, religion, disability, sex, sexual orientation, gender identity, ethnicity, marital status, pregnancy, childbirth or related medical conditions including lactation, age (except when age is a bona fide occupational qualification), veteran status, or other non-merit factors.

XIII. Evacuation Procedure

Evacuation Procedure: Please note the evacuation route posted at the classroom doorway. Two routes are marked in case one route might be blocked.