

**NEW RIVER COMMUNITY COLLEGE
DUBLIN, VIRGINIA**

COURSE PLAN

Course Number and Title: Mth 175 Calculus of One Variable

Prepared by: Mathematics Department August 18, 2013
(Date)

Approved by: _____
(Dean) (Date)

I. Course Description

Presents differential calculus of one variable including the theory of limits, derivatives, differentials, anti-derivatives and applications to algebraic and transcendental functions. Designed for mathematical, physical, and engineering science programs.

Prerequisite: A placement recommendation for MTH 175 and four units of high school mathematics including Algebra I, Algebra II, Geometry, and Trigonometry or equivalent. (Credit will not be awarded for more than one of MTH 173, MTH 175 or MTH 273.)

II. Introduction

The course satisfies a mathematics requirement for the for mathematical, physical, and engineering science programs. The course is designed to develop the skills and concepts in analytic geometry and calculus which are needed by engineering students.

III. Student Learning Outcomes

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

1. Evaluate limits using the definition.
2. Evaluate limits using other techniques.
3. Evaluate limits of trigonometric functions.
4. Evaluate limits involving infinity and points of discontinuity.
5. Evaluate limits of indeterminate forms.
6. Identify continuous functions.
7. Find points of discontinuity of functions.
8. Find the derivative of a function using the definition.
9. Find the derivative of a function using the rules of differentiation.
10. Use the derivative as a rate of change.
11. Find the derivative of trigonometric functions.
12. Find derivatives using the chain rule.
13. Find derivatives using implicit differentiation.
14. Find higher order derivatives.
15. Locate any local extrema of functions.
16. Apply Rolle's Theorem.

17. Apply the Mean Value Theorem.
18. Use the first derivative test to identify local extrema.
19. Find the concavity of the graph of a function.
20. Use the second derivative to identify local extrema.
21. Solve problems involving extrema.
22. Solve problems involving related fields.
23. Evaluate limits in indeterminate forms of $0/0$.
24. Evaluate limits in other indeterminate forms.

IV. Instructional Methods

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

V. Instructional Materials

Textbook: James Stewart, Calculus Early Transcendentals, 7th Ed., Brooks/Cole, 2012, ISBN: 978-0-538-49790-9

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

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

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

VI. Course Content

- Limits
- Derivatives
- Chain rule for derivatives
- Using derivatives to calculate extrema of a function.
- Using derivatives to graph functions
- Applications of derivatives

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 instructor 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.