Naugatuck Valley Community College
STEM Division
Science, Technology, Engineering and Mathematics

Common Course Syllabus
Calculus II MAT*H256

COURSE TITLE: Calculus II, MAT*H256

COURSE DESCRIPTION: A course for mathematics or science majors. Topics include the definite integral and applications of the definite integral to areas, volumes, and length of arc of a plane curve. Also considered are logarithmic and exponential functions, trigonometric functions, inverse trigonometric functions and various techniques of integration. Limits involving indeterminate forms and improper integrals are also discussed. The course concludes with an introduction to infinite series.

NUMBER OF CREDITS: 4 credit hours

PREREQUISITE: Grade of "C" or better in MAT*H254 (Calculus I).

COURSE OBJECTIVES:
1. Use exponential and logarithmic differentiation to find the derivative of a function.
2. Evaluate an integral by using strategies and/or techniques of integration.
3. Apply L'Hoptial's Rule to evaluate a limit, when applicable.
4. Determine the convergence or divergence of a series by using an appropriate test.
5. Solve application problems.

LEARNING OUTCOMES: At the end of this course the student will be able to do the following:

A. Exponential, Logarithmic and Inverse Trigonometric Functions —
   1. Find the derivative for any function containing exponential expressions.
   2. Find the integral for any function containing a simple exponential expression.
   3. Find the derivative for any function containing logarithmic expressions (including those found by the method of logarithmic differentiation).
   4. Find the integral for any function whose antiderivative involves the natural logarithmic function.
   5. Solve a separable differential equation as obtained from applications of the exponential law of growth or decay.
   6. Find the derivative for a function containing inverse trigonometric functions and evaluate an integral whose antiderivative involves the inverse trigonometric functions.
   7. Use L'Hopital's Rule to determine the limit for an expression which initially results in an indeterminate form.

B. Applications of Integration —
   1. Find the area under the curve or the area between curves.
   2. Find the volume of a solid of revolution using the disc or washer method.
   3. Find the volume of a solid with known cross sections (slicing method).
   4. Find the volume of a solid of revolution using the shell method.
   5. Find the arc length for a smooth curve.
   6. Find the area for a surface of revolution.

C. Integration Techniques —
   1. Evaluate an integral by any of the following methods:
      - Integration by parts
      - Completing the square
      - Trigonometric substitution
      - Partial fractions
   2. Evaluate an integral involving powers of trigonometric functions by using an appropriate combination of substitution, identities or tables.
   3. Evaluate an improper integral involving infinite limits of integration and/or infinite discontinuities.

D. Infinite Series —
   1. Determine the convergence or divergence of a sequence by an appropriate method.
   2. Determine the convergence or divergence of any positive term series by applying any of the following tests:
      - Test for divergence
      - Geometric series test
      - Integral test
      - P-series test
      - Direct comparison test
      - Limit comparison test

GRADING SYSTEM:
For the purpose of computing numerical credit point averages, grades are evaluated as follows for each semester hour of credit. Grades on exams, papers, and quizzes, will be based on this grading system.

Numeric Grade	Acceptable Letter Grade Range to be used by the instructor	Description
90 –100	A– to A	Excellent
80 – 89	B–, B, B+	Above Average
70 – 79	C–, C, C+	Average
60 – 69	D–, D, D+	Below Average
Below 60	F	Failing

CLASS CANCELLATION PROCEDURE: *If the instructor is late, the class is expected to wait 15 minutes before leaving or until informed of a cancellation by a college official. Information on weather related closings/late openings concerning Naugatuck Valley Community College can be obtained through local radio and television stations, or via the college website (*http://www.nvcc.commnet.edu*).* **NOTE:** *An alternative assignment may be given if classes are canceled due to weather.*

ACADEMIC HONESTY STATEMENT: *At NVCC we expect the highest standards of academic honesty. Academic dishonesty is prohibited in accordance with the Board of Trustee's Proscribed Conduct Policy in Section 5.2.1 of the BOT Policy Manual. This policy prohibits cheating on examinations, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, plagiarism, and other proscribed activities. Plagiarism is defined as the use of another's idea(s) or phrase(s) and representing that/those idea(s) as your own, either intentionally or unintentionally. Anyone who is caught cheating on exams, plagiarizing another's work or published material will fail the course regardless of progress made in the course.*

CHILDREN ON CAMPUS: *With permission of the instructor only – Children must be attended at all times by a responsible adult. The student must notify the instructor or supervisor prior to the beginning of the class or activity that a child is present. Instructors and/or supervisors are authorized to ask the student or program participants to leave should the presence of a child be disruptive.*

CELL PHONE/PAGER USE POLICY: *Students are hereby notified that cellular phones and beepers are allowed in class only if they are turned off or turned to a silent mode. Under no circumstances are telephones to be answered in class. Students who ignore this policy may be asked to leave class. When there are extenuating circumstances that require that a student be available by phone or beeper, the student should speak to the instructor prior to class, so that together they can arrive at an agreement concerning the device.*

STUDENTS WITH SPECIAL NEEDS: *Students who may require accommodations on the basis of a learning disability are encouraged to contact the Coordinator of Learning Disabilities. Students who may require accommodations on the basis of all other disabilities should contact the Coordinator of Disability Services. After providing documentation and completing the disability disclosure process, students are then encouraged to meet with their instructor(s) to discuss the accommodations approved by the appropriate Coordinator and to complete the Accommodations Agreement form. Accommodations are not retroactive, students are therefore encouraged to meet with their instructor(s) at the beginning of each semester. Instructors, in conjunction with appropriate college personnel, will provide assistance and/or accommodations only to those students who have completed the disability disclosure and accommodations process.*