

MIDDLESEX COUNTY COLLEGE
EDISON, NJ
MASTER SYLLABUS

Course ID and Name: MAT 132, Analytic Geometry & Calculus II

Department: Mathematics

Prerequisites: MAT 131 – Analytic Geometry & Calculus I (or approval of Department Chairperson)

Co-requisites: None

Course Description: Topics include trigonometric and hyperbolic functions, areas, centroids, techniques of integration, parametric curves and vectors, indeterminate forms, Taylor's formula and infinite series, and topics in analytic geometry.

Recommended for students majoring in engineering, mathematics, computer science, social science and the science related areas of chemistry and physics. *TI 83 or TI 84 calculator required.*

General Education Status: GE MST

Credits: 4

Lecture Hours: 4

Lab Hours: 0

Textbook(s) and Other Course Materials:

Textbook/e-Book:

Author: Hartman

Title: APEX Calculus, version 4.0

Publisher: APEX

Online Software: MyOpenMath

Core Learning Outcomes:

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

1. Use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
 - a. Translate quantifiable problems into mathematical terms and solve these problems using mathematical or statistical operations.
 - b. Construct graphs and charts, interpret them, and draw appropriate conclusions.
2. Communicate accurate mathematical terminology and notation to explain strategies to solve problems and interpret solutions.
3. Use technology correctly to solve mathematical problems.
4. Analyze and utilize the language of calculus, as well as the formal and mathematical definitions that accompany them.

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Policies:Disability Support

Students with disabilities, whether physical, learning or psychological, who believe that they may need accommodations in this class, are encouraged to contact Disability Services as soon as possible to ensure that the accommodations are implemented. Please meet with the Disability Services staff in Edison Hall, Room 100, (732) 906-2546.

Code of Student Conduct

To foster a productive learning environment, the College requires that all students adhere to the Code of Student Conduct which is published in the college catalog and website.

Content Strand	Students will be able to...
Inverse Trig Functions: Differentiation, Inverse Trig Functions: Integration, Hyperbolic Functions (CLO 1, 2, 3, 4)	<ul style="list-style-type: none"> • Compute derivatives and take integrals of the trig functions and hyperbolic functions and their inverse functions.
Area of a Region Between Two Curves (review), Volume: The Disk Method, The Shell Method, Arc Length and Surfaces of Revolution (CLO 1, 2, 3, 4)	<ul style="list-style-type: none"> • Use the definite integral to determine: area between curves, volumes of solids of revolution, arc lengths of rectifiable curves, and area of surfaces of revolution..
Work, Moments, Center of Mass, Centroids, Fluid Pressure and Fluid Force (CLO 1, 2, 3, 4)	<ul style="list-style-type: none"> • Apply calculus to physics problems
Integration by Parts, Trigonometric Integrals, Trigonometric Substitution (CLO 1, 3, 4)	<ul style="list-style-type: none"> • Evaluate integrals using: integration by parts, trigonometric substitutions
Indeterminate Forms and L'Hopital's Rule, Improper Integrals (CLO 1, 3, 4)	<ul style="list-style-type: none"> • Evaluate indeterminate forms and evaluate improper integrals.
Sequences, Series and Convergence, The Integral Test and p-Series, Comparisons of Series, Alternating Series, The Ratio and Root Tests (CLO 1, 3, 4)	<ul style="list-style-type: none"> • Interpret and solve limits of sequences and infinite series. Be able to use the various tests for infinite series convergence in order to determine convergence and prove it.
Taylor Polynomials and Approximations, Power Series Representation of Functions by Power Series, Taylor and Maclaurin Series (CLO 1, 2, 3, 4)	<ul style="list-style-type: none"> • Be able to determine intervals of convergence for power series and be able to form Taylor series for various special functions. • Be able to use the power series in problems involving limits, derivatives, and integrals.
Plane Curves and Parametric Equations, Parametric Equations and Calculus, Conics and Calculus (CLO 1, 2, 3, 4)	<ul style="list-style-type: none"> • Find parametric equations given information on plane curves, and vice versa • Use calculus to understand conics.

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