

NorthWest Arkansas Community College
Division of Science and Mathematics

Course Number and Title

MATH 2574 Calculus III

Catalog Description

A continuation of MATH 2564. Topics include parametric curves, vectors and vector-valued function, surfaces, partial differentiation, multiple integrals and vector calculus.

Prerequisites

MATH 2554 and 2564 with grades of C or better, or appropriate placement scores.

Credit hours/Contact hours/Load hours

4 credit hours/ 4 contact hours/ 4 load hours

Target Audience/Transferability

This course is designed for transfer students who are interested in technical or science based fields. It is the third in a sequence of three differential and integral calculus courses and transfers as such.

Student Learning Outcomes

- 1) Upon successful completion of this course students will exhibit mastery of certain knowledge and basic skills. These skills include, but are not limited to:
- 2) Analyze and perform operations with vectors
- 3) Graph in 3-space
- 4) Use calculus of vector-valued functions including velocity, acceleration, arc-length and curvature
- 5) Differentiate multivariate functions
- 6) Calculate and analyze the directional derivative and gradient
- 7) Optimize functions of several variables using the Second Partial Test and Lagrange Multipliers
- 8) Integrate and apply techniques of multiple integration
- 9) Set up, analyze, and evaluate integrals using vector calculus (including line integrals, Green's Theorem, Divergence Theorem, Stokes' Theorem)

Topics

1. Vectors and the Geometry of Space
2. Vector-Valued Functions
3. Functions of Several Variables including, but not limited to, Partial Derivatives, Directional Derivatives, and Optimization
4. Multiple Integration including rectangular, cylindrical, and spherical coordinate systems

5. Vector Calculus including line integrals, Green's Theorem, Stokes' Theorem, and Divergence Theorem

Forms of Assessment

Assessment of student learning outcomes will be administered according to the math department's current assessment plan.