MTH 253 : CALCULUS III

Transcript title
Calculus III

Credits
4

Grading mode
Standard letter grades

Total contact hours
60

Lecture hours
30

Lab hours
30

Recommended preparation
MTH 252.

Course Description
Introduces additional calculus concepts to science, mathematics, and engineering students. Includes selected topics in linear algebra, parametric and polar functions, applications of calculus to parametric and polar functions, infinite series, and Taylor series and polynomials.

Course learning outcomes
1. Apply vector and matrix concepts and operations to theoretical and applied problems, including those involving directional motion and systems of equations.
2. Graph and analyze parametric and polar equations.
3. Apply differential and integral calculus to parametric and polar equations.
4. Use an appropriate test to determine the convergence or divergence of an infinite series, such as the comparison test, integral test, alternating series test, ratio test, or root test.
5. Determine the radius and interval of convergence for a power series, be able to represent familiar functions by power series, and be able to describe when they can be differentiated and integrated term-by-term.
6. Approximate complicated functions using Taylor polynomials or partial sums of infinite series and be able to estimate the error in the approximation.

Content outline
1. Parametric and polar functions a. Differentiation b. Integration 2. Introduction to series 3. Series convergence tests a. Geometric series test b. Integral test c. Alternating series test d. Ratio test e. Additional tests 4. Power series a. Radius and interval of convergence b. Power series representation of functions c. Differentiation and integration of power series d. Taylor and Maclaurin series 5. Partial sums and error approximation 6. Linear algebra a. Vectors b. Matrices c. Systems of equations

Required materials
This class requires a textbook.

General education/Related instruction lists
- Mathematics