



Course No.	Course Title	No. of Units			Pre-requisites
		Th.	Pr.	Credit	
MATH 305	Topics in Differential Equations	3	-	3	MATH 203 MATH 204

Course Objectives:

- This course is primarily designed for undergraduate students studying physics and various disciplines of engineering.
- The student will learn to find power series solutions for second order linear ODEs with variable coefficients.
- The student will recognize and understand the special functions occurring in the solution of a variety of differential equations.
- This course will enhance the students' skills to comprehend the expressions involving special functions in the solutions of the problems of physics, mechanics, chemistry and biology.

Course Description:

Ordinary differential equations with variable coefficients, power series solution, solution about singular points and the method of Frobenius, the gamma function, the beta function, hypergeometric functions, Bessel functions, Legendre polynomials, Hermite polynomials, Laguerre polynomials, Chebyshev polynomials, applications.

Main text book:

- Special functions for scientists and engineers, by W. W. Bell, Dover Publications, 2004.

Subsidiary books:

- Elementary Differential Equations with Boundary Value Problems, by C. H. Edwards & D. E. Penney, 6th edition, Pearson Education International, Pearson Prentice Hill, 2009.