



Course Outlines

Course Details:

Course Code : MAT 325 Credit hours: 3.0
Course Title : Differential Equations and Fourier Analysis
Program : CSE/CSIT
Semester : Summer – 2016 (Day)
Course Teacher : Bristee Saha
Lecturer, Dept. of CSE/CSIT

Course Assessment:

The assessment components for evaluation of students are as follows:

Item/Activity	Marks (%)
Work Sheet (including class attendance and class tests)	25%
Assignment/ Presentation	10%
Mid-Term Test	25%
Final Examination	40%
Total	100%

Course Contents:

Lectures	Contents (Each lecture will be 1.5 hours duration)
Lecture-1	Ordinary Differential Equations: Degree of ordinary differential equations
Lecture-2	Order of ordinary differential equations
Lecture -3	Formation of differential equations
Lecture -4	Solutions of first order differential equations by various methods
Lecture -5	Solutions of first order differential equations by various methods
	Assignment/Presentation
Lecture -6	Solutions of general linear equations of second and higher orders with constant coefficients
Lecture -7	Solutions of general linear equations of second and higher orders with constant coefficients
	Class Test
Lecture -8	Solution of homogeneous linear equations
Lecture -9	Solution of homogeneous linear equations
Lecture -10	Solution of differential equations of the higher order when the dependent or independent variables are absent

Lecture -11	Solution of differential equation by the method based on the factorization of the operators
Lecture -12	Solution of differential equation by the method based on the factorization of the operators
	Class Test
	Mid-Term
Lecture -13	Partial Differential Equations (PDE): Solution by separation of variables; Linear PDE with constant coefficients
Lecture -14	Solution of Bessel's and Legendre's differential equation
Lecture -15	Series Solution: Solution of differential equations in series by the method of Frobenius
	Assignment/Presentation
Lecture -16	Fourier series and Transform: Real and complex form of Fourier series
Lecture -17	Fourier co-efficient
	Class Test
Lecture -18	Convergence of Fourier series
Lecture -19	Exponential form of Fourier series
Lecture -20	Fourier integral
Lecture -21	Fourier integral
Lecture -22	Fourier transforms and their uses in solving boundary value problems
Lecture -23	Fourier transforms and their uses in solving boundary value problems
Lecture -24	Overview
	Class Test
	Final Examination

Textbooks:	<ol style="list-style-type: none"> 1. Differential Equations Sheply L. Ross 2. Ordinary and Partial Differential Equations Md. Raisinghanian 3. Ordinary Differential Equations B. D. Sharma 4. Fourier Analysis Murray R. Spiegel
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