LESSON PLAN FOR WINTER SEMESTER(2021-22)

Discipline : 3rd semester (Electrical & ETC)
Name of the Faculty: SAMIRA KUMAR PATHI (Lect. in Mathematics)

Subject: Engg. Mathematics-3	4 therory classes per week	From: 01.10.2021　　　To:08.01.2022　　　　　　　　　　　　No. of Weeks: 13　　Total no. periods : 51 theory		
Week	**Class Day**	**Theory**		**Range**
1st	1st	**Complex Numbers** 1.1 Real and Imaginary numbers		01.10.2021 to 07.10.2021
	2nd	1.2 Complex numbers, conjugate complex numbers, Modulus and Amplitude of a complex number		
	3rd	1.3 Geometrical Representation of Complex Numbers.		
	4th	1.4 Properties of Complex Numbers		
2nd	1st	1.5 Determination of three cube roots of unity and their properties.		21.10.2021 to 27.10.2021
	2nd	1.6 De Moivre's theorem		
	3rd	**Matrices** 2.1. Define rank of a matrix.		
	4th	2.2. Perform elementary row transformations to determine the rank of a matrix.		
3rd	1st	2.3. State Rouche's theorem for consistency of a system of linear equations in unknowns.		28.10.2021 to 03.10.2021
	2nd	2.4. Solve equations in three unknowns testing consistency.		
	3rd	**Linear Differential Equations** 3.1. Define Homogeneous and Non – Homogeneous Linear Differential Equations with constant coefficients with examples		
	4th	3.2. Find general solution of linear Differential Equations in terms of C.F. and P.I.		
4th	1st	3.2. Find general solution of linear Differential Equations in terms of C.F. and P.I.		04.11.2021 to 10.11.2021
	2nd	3.3. Derive rules for finding C.F. And P.I. in terms of operator D		
	3rd	3.3. Derive rules for finding C.F. And P.I. in terms of operator D		
	4th	3.4 Define partial differential equation (P.D.E)		
5th	1st	3.5. Form partial differential equations by eliminating arbitrary constants and arbitrary functions.		11.11.2021 to 17.11.2021
	2nd	3.6. Solve partial differential equations of the form Pp + Qq = R		
	3rd	3.6. Solve partial differential equations of the form Pp + Qq = R		
	4th	**4. Laplace Transforms** 4.1. Define Gamma function		

6th	1st	4.2. Define Laplace Transform of a function and Inverse Laplace Transform	18.11.2021 to 24.11.2021
	2nd	4.3. Derive L.T. of standard functions and explain existence conditions of L.T.	
	3rd	4.4. Explain linear, shifting property of L.T	
	4th	4.4. Explain linear, shifting property of L.T	
7th	1st	4.5. Formulate L.T. of derivatives, integrals, multiplication by t^n and division by t .	25.11.2021 to 01.12.2021
	2nd	4.5. Formulate L.T. of derivatives, integrals, multiplication by t^n and division by t .	
	3rd	4.6. Derive formulae of inverse L.T. and explain method of partial fractions	
	4th	4.6. Derive formulae of inverse L.T. and explain method of partial fractions	
8th	1st	4.6. Derive formulae of inverse L.T. and explain method of partial fractions	02.12.2021 to 08.12.2021
	2nd	**5. Fourier Series** 5.1. Define periodic functions.	
	3rd	5.2. State Dirichlet's condition for the Fourier expansion of a function and it's convergence	
	4th	5.2. State Dirichlet's condition for the Fourier expansion of a function and it's convergence	
9th	1st	5.3. Express periodic function f(x) satisfying Dirichlet's conditions as a Fourier series	09.12.2021 to 15.12.2021
	2nd	5.4. State Euler's formulae	
	3rd	5.4. State Euler's formulae	
	4th	5.5. Define Even and Odd functions and find Fourier Series	
10th	1st	Obtain F.S of continuous functions and functions having points of discontinuity	16.12.2021 to 22.12.2021
	2nd	Obtain F.S of continuous functions and functions having points of discontinuity	
	3rd	**6. Numerical Methods** 6.1. Appraise limitation of analytical methods of solution of Algebraic Equations	
	4th	6.2. Derive Iterative formula for finding the solutions of Algebraic Equations by : 6.2.1. Bisection method	
11th	1st	6.2.2. Newton- Raphson method	23.12.2021 to 29.12.2021
	2nd	**7. Finite difference and interpolation** 7.1. Explain finite difference and form table of forward and backward difference	
	3rd	7.2. Define shift Operator and establish relation between & difference operator .	
	4th	7.2. Define shift Operator and establish relation between & difference operator .	

12th	1st	7.3. Derive Newton's forward and backward interpolation formula for equal intervals.	30.12.2021 to 05.01.2022
	2nd	7.3. Derive Newton's forward and backward interpolation formula for equal intervals.	
	3rd	7.4. State Lagrange's interpretation formula for unequal intervals.	
	4th	7.4. State Lagrange's interpretation formula for unequal intervals.	
13th	1st	7.5 Explain numerical integration and state: 7.5.1. Newton's Cote's formula.	06.01.2022 to 08.01.2022
	2nd	7.5.2. Trapezoidal rule.	
	3rd	7.5.3. Simpson's 1/3rd rule	