

SOCIETY OF ST. FRANCIS XAVIER, PILAR'S
FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

(Approved by AICTE & Affiliated to University of Mumbai)

Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

Phone : (022) 6711 4000, 6711 4101, 6711 4104

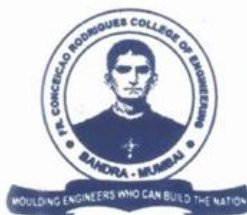
Website : www.frcce.ac.in • Email : crce@fragnel.edu.in

Humanities and Sciences
(Academic Year: 2023-2024)

Course Code: FEC 101	
Course Name: Engineering Mathematics – I	
Course Teacher: Prof. Gauree U Jagushte.	
Course Outcomes (CO): At the End of the course students will be able to	
CO.1	Find the roots of complex number using De Moivre's theorem.
CO.2	Classify the complex number into real and imaginary parts.
CO.3	Demonstrate the higher order derivatives of a differentiable function using techniques of successive differentiation.
CO.4	List the extremum of a function of two variables using method of partial differentiation.
CO.5	Apply concepts of matrices to solve the system of linear equations.
CO.6	Apply Numerical Methods for solving engineering problems with the help of SCILAB software.

Course Lesson Plan

Sr. No.	Proposed Date	Topics	Delivery Mode	CO	Assessment Tool	Ref. book	Actual Date	Remark
1	22/08/2023	Symmetric, skew-symmetric, Hermitian & Skew Hermitian matrices	Lecture	CO5	UT1,T1	1, R1		
2	23/08/2023	Unitary, Orthogonal Matrices and properties of Matrices	Lecture	CO5	UT1,T1	1, 2,R1		
3	25/08/2023	Rank of a Matrix using Echelon form and Normal form	Lecture	CO5	UT1,T1	1, R1		
4	29/08/2023	Reduction to normal form and PAQ form	Lecture	CO5	UT1,T1	1, 2,R1		
5	30/08/2023	System of homogeneous and non-homogeneous equations, their consistency and solutions-I	Lecture	CO5	UT1,T1	1, R1		
6	01/09/2023	System of homogeneous and non-homogeneous equations, their consistency and solutions-II	Lecture	CO5	UT1,T1	1, R1		
7	05/09/2023	Solution of Transcendental equations by Newton Raphson	Lecture	CO6	UT1, T2	1, 2,R1		



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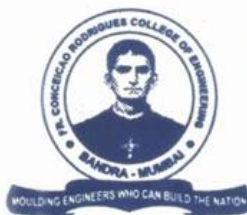
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		method					
8	08/09/2023	Solution of Transcendental equations by Regula-falsi method	Lecture	CO6	UT1, T2	1, R1	
9	11/09/2023	Numerical solutions of system of equations using Gauss-Jacobi method	Lecture	CO6	UT1, T2	1, 2,R1	
10	11/09/2023	Numerical solutions of system of equations using Gauss-Seidal method	Lecture	CO6	UT1, T2	1, R1	
11	12/09/2023	Taylor's Theorem (Statement only) and Taylor's series, Maclaurin's series	Lecture	CO6	UT1, T2	1, 2,R1	
12	15/09/2023	Expansion of e^x , $\sin(x)$, $\cos(x)$, $\tan(x)$, $\sinh(x)$, $\cosh(x)$, $\tanh(x)$, $\log(1+x)$, $(x)^n$, $(x)^{-n}$	Lecture	CO6	UT1, T2	1, R1	
13	20/09/2023	Partial derivatives of first and higher order.	Lecture	CO4	UT2, T3	1, R1	
14	21/09/2023	Differentiation of composite function-I	Lecture	CO4	UT2, T3	1, R1	
15	22/09/2023	Differentiation of composite function-II	Lecture	CO4	UT2, T3	1, R1	
16	25/09/2023	Euler's Theorem on Homogeneous functions with two independent variables-I	Lecture	CO4	UT2, T3	1, R1	
17	26/09/2023	Euler's Theorem on Homogeneous functions with two independent variables-II	Lecture	CO4	UT2, T3	1, R1	
18	29/09/2023	Deductions from Euler's Theorem.	Lecture	CO4	UT2, T3	1, R1	
19	03/10/2023	Maxima and minima of a function with two variables	Lecture	CO4	UT2, T4	1, R1	
20	06/10/2023	Maxima and minima of a function with two variables	Lecture	CO4	UT2, T4	1, R1	
21	09-10-2023	Lagrange's method of undetermined multipliers with one constraint.	Lecture	CO4	UT2, T4	1,2, R1	
22	10-10-2023	n th derivative of standard functions	Lecture	CO3	UT2, T4	1, R1	
23	11-10-2023	Leibnitz theorem(without proof) problems -1	Lecture	CO3	UT2, T4	1, R1	
24	12-10-2023	Leibnitz theorem(without proof) problems –II	Lecture	CO3	UT2, T4	1, R1	
25	13/10/2023	De Moivre's theorem-I	Lecture	CO3	UT2, T4	1, R1	



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26	16/10/2023	De Moivre's theorem-I	Lecture	CO3	UT2, T4	1, 2,R1		
27	17/10/2023	Expansion of powers of $\sin\theta$, $\cos\theta$ in terms of sines and cosines of multiples of θ .	Lecture	CO3	UT2, T4	1, R1		
28	20/10/2023	Expansion of $\sin^n\theta$, $\cos^n\theta$ in powers of $\sin\theta$, $\cos\theta$.	Lecture	CO1	UT2, T5	1, R1		
29	23/10/2023	Powers and roots of complex numbers-I	Lecture	CO1	UT2, T5	1, R1		
30	24/10/2023	Powers and roots of complex numbers-II	Lecture	CO1	UT2, T5	1, R1		
31	27/10/2023	Circular functions of complex number and Hyperbolic functions.	Lecture	CO1	UT2, T5	1, R1		
32	30/10/2023	Inverse Circular and Inverse Hyperbolic functions	Lecture	CO1	UT2, T5	1, R1		
33	31/10/2023	Separation of real and Imaginary parts of Logarithmic Functions.	Lecture	CO1	UT2, T5	1, R1		
34	03/11/2023	Separation of real and Imaginary parts of Logarithmic Functions	Lecture	CO2	UT2, T6	1, R1		
35	06/11/2023	Separation of real and Imaginary parts of Logarithmic Functions	Lecture	CO2	UT2, T6	1, R1		
36	07/11/2023	Separation of real and imaginary-I	Lecture	CO2	UT2, T6	1, R1		
37	10/11/2023	Separation of real and imaginary-I	Lecture	CO2	UT2, T6	1, R1		
38	13/11/2023	Separation of real and imaginary-II	Lecture	CO2	UT2, T6	1, R1		
39	14/11/2023	Separation of real and imaginary-II	Lecture	CO2	UT2, T6	1, R1		
40	17/11/2023	Separation of real and imaginary-II	Lecture	CO2	UT2, T6	1, 2,R1		
41	13/11/2023	Separation of real and imaginary-III	Lecture	CO2	UT2, T6	1, R1		
42	20/11/2023	Separation of real and imaginary-III	Lecture	CO2	UT2, T6	1, R1		
43	21/11/2023	RIVISION						
44	24/11/2023	RIVISION						



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Text Books:

1. Engineering Mathematics-I by G.V. Kumbhojkar, J. Jamnadas Publication
2. Engineering Mathematics-I by Dr. N.R. Dasre, TechKnowledge Publication

Reference Books:

1. Advance Engineering Mathematics by H.K. Dass, S.Chand & Company Limited
2. Advance Engineering Mathematics by Peter O' Neil, Cengage Learning

Web References:

1. <https://archive.nptel.ac.in/courses/122/104/122104018/>
2. https://onlinecourses.nptel.ac.in/noc22_ma53/preview [for strong learners]

Course Instructor: Prof. Gauree Jagushte.