

DEPARTMENT OF MATHEMATICS
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
SRM NAGAR, KATTANKULATHUR – 603 203
B.Tech –First Year/ Second Semester

LESSON PLAN

Subject Name: Advanced Calculus and Complex Analysis
Subject Code: 18MAB102T
Date: 2-02-2022

Module I			
Lecture Hour		Description	References
S-1	SLO-1	Evaluation of double integration Cartesian and plane polar coordinates	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.294-297
	SLO-2	Evaluation of double integration of plane polar coordinates	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.1-4.17
S-2	SLO-1	Evaluation of double integration of plane polar coordinates	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.1-4.17
	SLO-2	Evaluation of double integration of plane polar coordinates	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.1-4.17
S-3	SLO-1	Evaluation of double integral by changing of order of integration	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.297-300
	SLO-2	Evaluation of double integral by changing of order of integration	
S-4	SLO-1	Problem solving using tutorial sheet 1	
	SLO-2	Problem solving using tutorial sheet 1	
S-5	SLO-1	Evaluation of double integral by changing of order of integration	Veerarajan T., Engineering Mathematics for first year, Tata

			McGraw-Hill, New Delhi,2008, Page No.4.17 and 4.21-4.27.
S-6	SLO-2	Area as a double integral (Cartesian)	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.18 and 4.29-4.30.
	SLO-1	Area as a double integral (Cartesian)	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.301-303
	SLO-2	Area as a double integral (polar)	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.301-303
S-7	SLO-1	Area as a double integral (polar)	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.301-303
	SLO-2	Triple integration in Cartesian coordinates	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.305-307
S-8	SLO-1	Problem solving using tutorial sheet 2	
	SLO-2	Problem solving using tutorial sheet 2	
S-9	SLO-1	Conversion from Cartesian to polar in double integrals	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.18-4.19 and 4.33-4.35.
	SLO-2	Conversion from Cartesian to polar in double integrals	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.18-4.19 and 4.33-4.35.
S-10	SLO-1	Triple integration in Cartesian coordinates	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.1-4.17
	SLO-2	Triple integration in Cartesian coordinates	T. Veerarajan-Engineering Mathematics for first year, Page No.4.1-4.17
S-11	SLO-1	Triple integration in Cartesian coordinates	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.4.1-4.17
	SLO-2	Volume using triple Integral	Veerarajan T., Engineering Mathematics

			for first year, Tata McGraw-Hill, New Delhi, 2008, Page No.4.1-4.17
S-12	SLO-1	Problem solving using tutorial sheet 3	
	SLO-2	Application of Multiple integral in engineering	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.294-315
		Cycle Test-I (4/04/22)	

Module II			
Lecture Hour		Description	References
S-1	SLO-1	Review of vectors in 2,3 dimensions	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.81-83
	SLO-2	Gradient, divergence,	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.350-354
S-2	SLO-1	curl – Solenoidal	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.355-363
	SLO-2	Irrotational fields	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.382-386
S-3	SLO-1	Vector identities (without proof) – Directional derivatives	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008, Page No.2-2.12
	SLO-2	Line integrals	B.S. Grewal, Higher Engineering Mathematics, Khanna

			Publishers, 36th Edition, 2010, page No.364-366
S-4	SLO-1	Problem solving using tutorial sheet 4	
	SLO-2	Problem solving using tutorial sheet 4	
S-5	SLO-1	Line integrals	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.364-366
	SLO-2	Surface integrals	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.366-368
S-6	SLO-1	Surface integrals	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.366-368
	SLO-2	Volume Integrals	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.376-381
S-7	SLO-1	Green's theorem (without proof),	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.369-371
	SLO-2	Green's theorem (without proof),	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.369-371
S-8	SLO-1	Problem solving using tutorial sheet 5	
	SLO-2	Problem solving using tutorial sheet 5	
S-9	SLO-1	Gauss divergence theorem (without proof), verification	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.376
	SLO-2	Gauss divergence theorem (without proof) applications to cubes.	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008, Page No.2.54
S-10	SLO-1	Gauss divergence theorem (without proof) applications to parallelepiped.	B.S. Grewal, Higher Engineering Mathematics, Khanna

			Publishers, 36th Edition, 2010, page No.378
	SLO-2	Stoke's theorems (without proof) – Verification	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.372
S-11	SLO-1	Stoke's theorems (without proof) – Applications to cubes	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008, Page No.2.54
	SLO-2	Stoke's theorems (without proof)– Applications to parallelepipedonly.	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008, Page No.2.51
S-12	SLO-1	Problem solving using tutorial sheet 6	
	SLO-2	Application of Line and Volume Integrals in engineering	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.350-386

Module III			
Lecture Hour	Description		References
S-1	SLO-1	Laplace Transforms of standard functions	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, pageNo.797-799
	SLO-2	Transforms properties	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No:799-802
S-2	SLO-1	Transforms of Derivatives and Integrals	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.805-810
	SLO-2	Transform of derivatives and integrals	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.805-810
	SLO-1	Initial value theorems (without proof) and verification for some problems	Veerarajan T., Engineering Mathematics

S-3			for first year, Tata McGraw-Hill, New Delhi,2008, Page No.5.69-5.70 and 5.89-5.90
	SLO-2	Final value theorems (without proof) and verification for some problems	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.5.69-5.70 and 5.89-5.90
S-4	SLO-1	Problem solving using tutorial sheet 7	
	SLO-2	Problem solving using tutorial sheet 7	
S-5	SLO-1	Inverse Laplace transforms using partial fractions	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.811-814
	SLO-2	Inverse Laplace transforms using Partial fractions	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.811-814
S-6	SLO-1	Inverse Laplace transforms using second shifting theorem	
	SLO-2	LT using Convolution theorem -problems only	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.818-821
S-7	SLO-1	LT using Convolution theorem -problems only	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.818-821
	SLO-2	ILT using Convolution theorem -problems only	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.818-821
S-8	SLO-1	Problem solving using tutorial sheet 8	
	SLO-2	Problem solving using tutorial sheet 8	
S-9	SLO-1	LT of periodic functions -problems only	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.803-804
	SLO-2	LT of periodic functions -problems only	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New

			Delhi,2008, Page No.5.69-5.70 and 5.38-5.37
S-10	SLO-1	Solve linear second order ordinary diff. equations with constant coefficient only	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.821-824
	SLO-2	Solve linear second order ordinary diff. equations with constant coefficient only	
S-11	SLO-1	Solution of Integral equation and integral equation involving convolution type	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.5.69-570 and 5.98-5.112
	SLO-2	Solution of Integral equation and integral equation involving convolution type	
S-12	SLO-1	Problem solving using tutorial sheet 9	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.797-824
	SLO-2	Application of Laplace Transform in engineering	
		Cycle test –II(23/05/22)	

Module IV			
Lecture Hour		Description	References
S-1	SLO-1	<i>Definition of Analytic Function – Cauchy Riemann equations</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.738-744
	SLO-2	<i>Cauchy Riemann equations</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.738-744
S-2	SLO-1	<i>Properties of analytic function functions</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.738-

			744
	SLO-2	<i>Determination of analytic function using – Milne-Thomson's method</i>	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.3.26-3.43
S-3	SLO-1	<i>Determination of analytic function using – Milne-Thomson's method</i>	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.3.26-3.43
	SLO-2	<i>Determination of analytic function using – Milne-Thomson's method</i>	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.3.26-3.43
S-4	SLO-1	<i>Problem solving using tutorial sheet 10</i>	
	SLO-2	<i>Problem solving using tutorial sheet 10</i>	
S-5	SLO-1	<i>Conformal mappings: magnification</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.755-760
	SLO-2	<i>Conformal mappings: rotation</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.755-760
S-6	SLO-1	<i>Conformal mappings: inversion</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No. 755-760
	SLO-2	<i>Conformal mappings: inversion</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No. 755-760
S-7	SLO-1	<i>Conformal mappings: reflection</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No. 755-760
	SLO-2	<i>Conformal mappings: reflection</i>	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008, Page No.3.45-3.76
	SLO-1	<i>Problem solving using tutorial sheet 11</i>	

S-8	SLO-2	<i>Problem solving using tutorial sheet 11</i>	
S-9	SLO-1	<i>bilinear transformation</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.751-754
	SLO-2	<i>bilinear transformation</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.751-754
S-10	SLO-1	<i>bilinear transformation</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.751-754
	SLO-2	<i>bilinear transformation</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.751-754
S-11	SLO-1	<i>Cauchy's integral theorem (without proof)</i>	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008, Page No.4.4-4.9
	SLO-2	<i>Cauchy's integral theorem applications</i>	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008, Page No.4.4-4.9
S-12	SLO-1	<i>Problem solving using tutorial sheet 12</i>	
	SLO-2	<i>Application of Bilinear Transformation and Cauchy Integral in engineering</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.738-760

Module 5			
Lecture Hour	Description		References
S-1	SLO-1	<i>Cauchy's integral formulae - Problems</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.762-769
	SLO-2	<i>Cauchy's integral formulae- Problems</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.762-769

S-2	SLO-1	<i>Cauchy's integral formulae- Problems</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.762-769
	SLO-2	<i>Taylor's expansions with simple problems</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.772-776
S-3	SLO-1	<i>Taylor's expansions with simple problems</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No. 772-776
	SLO-2	<i>Laurent's expansions with simple problems</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No. 772-776
S-4	SLO-1	<i>Problem solving using tutorial sheet 13</i>	
	SLO-2	<i>Problem solving using tutorial sheet 13</i>	
S-5	SLO-1	<i>Laurent's expansions with simple problems</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No. 772-776
	SLO-2	<i>Singularities</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.776-779
S-6	SLO-1	<i>Types of Poles and Residues</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.776-779
	SLO-2	<i>Types of Poles and Residues</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.776-779
S-7	SLO-1	<i>Cauchy's residue theorem (without proof)-</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.779-784
	SLO-2	<i>Contour integration: Unit circle.</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th

			Edition, 2010, page No.779-784
S-8	SLO-1	<i>Problem solving using tutorial sheet 14</i>	
	SLO-2	<i>Problem solving using tutorial sheet 14</i>	
S-9	SLO-1	<i>Contour integration: Unit circle.</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.785-790
	SLO-2	<i>Contour integration: Unit circle</i>	
S-10	SLO-1	<i>Contour integration: semicircular contour.</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.785-790
	SLO-2	<i>Contour integration: semicircular contour.</i>	
S-11	SLO-1	<i>Contour integration: semicircular contour.</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.785-790
	SLO-2	<i>Contour integration: semicircular contour.</i>	
S-12	SLO-1	<i>Problem solving using tutorial sheet 15</i>	
	SLO-2	<i>Application Contour integration in engineering</i>	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010, page No.785-790
		Cycle test -III(20/06/2022)	

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