Curriculum Plan (EVEN SEM 2025): B. Sc. (H) Mathematics III Year (Semester VI)
Paper: DSC-Complex Analysis

<table>
<tr>
<td colspan="2">Dr. Tajender Kumar

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tajenderkumar@kalindi.du.ac.in</td>
<td rowspan="2"></td>
<td>Marks Distribution</td>
<td>Theory</td>
<td colspan="2">90 Marks</td>
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<td>Practical</td>
<td colspan="2">40 Marks</td>
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<td colspan="2" rowspan="3"></td>
<td rowspan="3"></td>
<td rowspan="3">Internal Assessment</td>
<td>Assignments</td>
<td>12 Marks</td>
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<tr>
<td>Home Exams/

Class Test</td>
<td>12 Marks</td>
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<tr>
<td>Attendance</td>
<td>6 Marks</td>
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<td colspan="2"></td>
<td rowspan="2">Classes Assigned</td>
<td>Lectures</td>
<td colspan="2">3 per week (Theory)</td>
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<tr>
<td colspan="2"></td>
<td>Lab</td>
<td colspan="2">2 per week</td>
</tr>
<tr>
<td>References</td>
<td></td>
<td colspan="4">1. Brown, James Ward, & Churchill, Ruel V. (2014). Complex Variables and Applications (9th ed.). McGraw-Hill Education. New York.</td>
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<td></td>
<td>Beginning/1st week with 3 days

02nd Jan. - 11th Jan.</td>
<td colspan="3">Topics

Functions of a complex variable and mappings.
[1] Chapter 2 (Sections 13, and 14).</td>
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<td>2nd week

13th Jan. – 18th Jan</td>
<td colspan="3">Limits, Theorems on limits, Limits involving the point at infinity.

[1] Chapter 2 (Sections 15 to 17).</td>
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	3rd week 20th Jan. – 25th Jan.	Continuity and differentiation. [1] Chapter 2 (Sections 18 to 20).	
	4th week 27th Jan. – 01st Feb.	Cauchy-Riemann equations and examples, Sufficient conditions for differentiability, Analytic functions and their examples. [1]: Chapter 2 (Sections 21, 22, 23, 25, and 26).	
	5th week 03rd Feb.- 08th Feb.	Exponential, logarithmic, and trigonometric functions. [1]: Chapter 3 (Sections 30, 31, 37, and 38).	
	6th week 10th Feb. – 15th Feb.	Derivatives of functions, Definite integrals of functions, Contours. [1]: Chapter 4 (Sections 41, 42, and 43).	
	7th week 17th Feb. – 22nd Feb.	Contour integrals and examples, Upper bounds for moduli of contour integrals. [1]: Chapter 4 (Sections 44, 45, and 47).	
	8th week 24th Feb. – 01st Mar.	Antiderivatives, and proof of the antiderivative theorem. [1]: Chapter 4 (Sections 48, and 49).	
	9th week 03rd Mar.– 08th Mar.	Cauchy-Goursat theorem (without proof), Cauchy integral formula and its extension with consequences; Liouville's theorem and the fundamental theorem of algebra. [1]: Chapter 4 (Sections 50, 52 to 58).	

	10th week 17th March. – 22th Mar.	Cauchy-Goursat theorem (without proof), Cauchy integral formula and its extension with consequences; Liouville's theorem and the fundamental theorem of algebra. [1]: Chapter 4 (Sections 50, 52 to 58).	
	11th week 24th Mar. – 29th Mar.	Taylor and Laurent series with examples. [1]: Chapter 5 (Overview of Sections 60 and 61). [1]: Chapter 5 (Sections 62 to 66, and 68).	
	12th week 31st Mar. – 05th Apr.	Taylor and Laurent series with examples. [1]: Chapter 5 (Overview of Sections 60 and 61). [1]: Chapter 5 (Sections 62 to 66, and 68).	
	13th week 07th Apr. – 12th Apr.	Absolute and uniform convergence of power series, Integration, differentiation and uniqueness of power series. [1]: Chapter 5 (Sections 69, 71, and 72).	
	14th week 14th Apr. – 19th Apr.	Isolated singular points, Residues, Cauchy's residue theorem, Residue at infinity, Types of isolated singular points. [1]: Chapter 6 (Sections 74 to 79).	
	15th week with 2 Days 21st Apr. – 29th Apr.	Residues at poles and its examples, An application to evaluate definite integrals involving sines and cosines. [1]: Chapter 6 (Sections 80, and 81).	

		[1]: Chapter 7 (Section 92).	
		Dispersal of classes, preparation leave and practical examination begin- 30 April, 2025.	