

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**

**Course Schedule: November 2024 – April 2025**

**Department : Mathematics**  
**Name/s of the Faculty : Dr. A. Josephine Lissie**  
**Course Title : Complex Analysis**  
**Course Code : 19MT/MC/CA65**  
**Shift : I**

<b>Shift</b> :	<b>Units &amp; Topics</b>	<b>Teaching Methodology</b>	<b>Text &amp; References</b>	<b>Method of Evaluation</b>
Nov 18 – 25, 2024 (Day Order 1-6)  6 Hours	<b>Unit I - Analytic Functions</b> 1.1 Functions of a complex variable 1.2 Continuous functions 1.3 Derivatives 1.4 Cauchy Riemann's Equations. 1.5 Sufficient conditions	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications	Questioning
Nov 26- Dec 3, 2024 (Day Order 1-6) 6 Hours	<b>Unit I - Analytic Functions</b> 1.6 Polar Co-ordinates 1.7 Analytic functions 1.8 Harmonic functions 1.9 Harmonic Conjugate	Lecture	Shanti Narayan, (1973), Theory of Functions of a Complex Variable, S. Chand and Co., (Pvt) Ltd., New Delhi.	Test
Dec 4-11, 2024 (Day Order 1-6) 6 Hours	<b>Unit 2- Elementary Functions</b> 2.1 Exponential Function 2.2 Logarithmic Function 2.3 Branches and derivatives	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications	<b>III Comp - I</b> (Units I) Open Problem Test (15 Marks)
Dec 12-19, 2024 (Day Order 1-6) 6 Hours	<b>Unit 2</b> 2.4 Linear Transformations 2.5 Transformations $w=1/z$ 2.6 Linear Fractional Transformations	Lecture	Arumugam S., Issac A.T., & Somasundaram, A., (2002), Complex Analysis, Scitech Publications (India) Pvt., Ltd., Chennai.	Questioning
Dec 20, 2024 (Day Order 1 ) 1 Hours	<b>Unit 2</b> 2.7 Implicit Form	Lecture	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications.	Group discussion
Jan 3 – 7, 2025 (Day Order 3-6) 3 Hours	<b>Unit 3 – Integrals</b> 3.1 Cauchy – Goursat Theorem 3.2 Simply Connected Domain	Lecture	Rohit Khurana, ITL ESL, (2012), Complex Analysis, Publications Dorling Kindersley (India) Pvt.	Problem Assignment <b>III Comp - II</b> (Units 2) 20 marks
Jan 8 – 17, 2024 (Day Order 1-6) 6 Hours	<b>Unit 3 – Integrals</b> 3.4 Cauchy Integral Formula 3.5 Extension of Cauchy Integral Formula	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications.	Problem assignment

Jan 18 - 23, 2025	<b>C.A. Test – I : Unit 2 and 3 (3.1 - 3.5)</b>			
Jan 24 - 30, 2025 (Day Order 1-6) 6 Hours	<b>Unit 3 – Integrals</b> 3.6 Consequence of Extension 3.7 Liouville’s Theorem 3.8 Maximum Modulus Principle	Lecture & Problem	Arumugam S., Issac A.T., & Somasundaram, A., (2002), Complex Analysis, Scitech Publications (India)	Questioning
Feb 3-8, 2025 (Day Order 1-6) 6 Hours	<b>Unit 4 – Conformal Mapping</b> 4.1 Preservation of angles 4.2 Scale Factors 4.3 Two Dimensional Fluid Flow 4.4 Stream Functions	Lecture & Problem solving	Sharma J.N., (1990), Functions of Complex Variable, Krishna Prakashan Mandir, Meerut.	Slip test
Feb 10– 18, 2025 (Day Order 1-4) 4 Hours	<b>Unit 4 – Conformal Mapping</b> 4.5 Flow around the corner and a cylinder 4.6 Taylors Series	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications.	Problem Assignment
Feb 19- 26, 2025 (Day Order 1-6) 6 Hours	4.6 Taylors Series – Problems 4.7 Laurent Series 4.7 Laurent Series problems	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications.	Quiz <b>III Comp-III</b> (Unit 5) (15 marks)
Feb 27- Mar 6, 2025 (Day Order 1-6) 6 Hours	<b>Unit 5 –Residues and poles</b> 5.1 Singular points 5.2 Residues 5.3 Cauchy Residue Theorem 5.4 Residue at infinity 5.5 Types of Singular points	Lecture & Problem solving	Narayanan,Manicavachagom Pillai, (1994), Complex Analysis, Viswanathan (Printer & Publishers) Pvt., Ltd., Chennai.	Problem Assignment
Mar 7 – 11, 2025 (Day Order 1-3) 3 Hours	5.6 Residues at poles 5.7 Zeros of analytic functions 5.8 Zeros and poles	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications.	Problem Assignment
Mar 12 –17, 2025	<b>C.A. Test – II I : Unit 4 and 5 (5.1 - 5.8)</b>			
Mar 18 – 20, 2025 (Day 4 to 6) 3 Hours	5.9 Evaluation of improper integrals	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications.	Problem Assignment
Mar 21 - 28, 2025 (Day Order 1-6) 6 Hours	5.10 Definite integrals with sines and cosines & problems 5.11 Argument Principle	Lecture & Problem solving	Arumugam S., Issac A.T., & Somasundaram, A., (2002), Complex Analysis, Scitech Publications (India) Pvt., Ltd.	Problem Assignment

Mar 29- April 3, 2025 (Day Order 1 -3) 3 Hours	5.12 Rouché theorem	Lecture & Problem solving	Churchill, R.V., Brown J.W. & Verkey R.V., (1990), Complex Variables and Applications.	Problem Assignment
---	---------------------	---------------------------------	---	-----------------------

	<b>REVISION</b>
--	-----------------