

## Linear Algebra and Complex Analysis (MAL 151)

Course no: MAL 151	Open course (YES/NO)	HM Course (Y/N)	DC (Y/N)	DE (Y/N)	
	NO	N	N	N	
Type of course	Theory				
Course Title	Linear Algebra and Complex Analysis				
Course Coordinator	Dr. AmitMahajan				
Course objectives:	This course covers matrix theory and linear algebra, emphasizing topics useful in other disciplines. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering. Also, this course covers basic concepts of complex analysis, such as limit, continuity, differentiability and integration, and also related theorems.				
POs					
Semester: 2 <sup>nd</sup>		Autumn:		Spring: Yes	
	Lecture	Tutorial	Practical	Credits	Total Teaching Load
Contact Hours	3	1	0	4	48
Prerequisite course code as per proposed course numbers	Nil	Nil			
Prerequisite credits	Nil	Nil			
Equivalent course codes as per proposed course and old course	Nil	Nil			
Overlap course codes as per proposed course numbers	Nil	Nil			
Text Books:					
1.	Title	Linear Algebra and its Applications			
	Author	David C. Lay			
	Publisher	Pearson Pub.			
	Edition	2011			
2.	Title	Complex variables and its applications			
	Author	R. V. Churchill			
	Publisher	McGraw Hill			
	Edition	1960			
Reference Book:					
1.	Title	Introduction to Linear Algebra			
	Author	Gilbert Strang			
	Publisher	Cambridge Press			
	Edition	2009			
2.	Title	Advanced Engineering Mathematics			
	Author	E. Kreyszig			
	Publisher	John Wiley and Sons			

	Edition	2008
<b>Content</b>	<p><b>Unit I: Linear Algebra:</b> Elementary of row and column operations on a matrix, Rank of a matrix, Normal form, Inverse of matrix, Systems of linear equation and their solutions, Vector space and its subspaces, Spanning sets and linear independence, Determinant properties, Linear transformation, Range space and Rank, Null space and nullity, Eigenvalues and eigenvector, Diagonalization of matrices, Similarity of matrices, Inner product, Gram Schmidt process, Least square approximations. (24 hours)</p> <p><b>Unit II: Complex Analysis:</b> Complex number and elementary properties, Complex functions-Limit, continuity and differentiability, Polar form of Complex number, Cauchy Riemann Equations, Analytic and Harmonic functions, Cauchy's Theorem, Cauchy's Integral formula, Taylor and Laurent's series expansion, Zeros and singularities, Residues, Residue theorem and its applications. (24 hours)</p>	
<b>Curse Assessment</b>	<p>Continuous Evaluation 25%</p> <p>Mid Semester 25%</p> <p>End Semester 50%</p>	