

**DEPARTMENT OF MATHEMATICS**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**SRM UNIVERSITY**  
**UMA15101 ALGEBRA AND TRIGONOMETRY**

**LESSON PLAN**

<b>UNIT I - MATRICES</b>			
Lect. No.	Lesson Schedule	Learning outcomes	Cumulative hours
L1.1	Rank of a matrix	Students will able to Apply the concepts of matrices, in solving a system of linear equations	2
L1.2	Consistency of a system of linear equations		4
L1.3	Characteristic equation		5
L1.4	Eigen values and Eigen vectors - properties - problems.		9
L.1.5	Cayley - Hamilton theorem (statement only) and its applications		11
L.1.6	Diagnolisation of Matrices - problem		12
<b>UNIT II - THEORY OF EQUATIONS</b>			
L.2.1	Polynomial equations	Students will able to be familiar with Be familiar with the theory of equations	14
L.2.2	Imaginary and Irrational roots		16
L.2.3	Relation between roots and coefficients of equations		18
L.2.4	Symmetric functions of roots in terms of coefficients of third degree equation - problems.		24
<b>UNIT III – RECIPROCAL EQUATIONS</b>			
L.3.1	Sum of the powers of the roots of an equation	Students will Get exposed to the transformation of equations	24
L.3.2	Newton’s Theorem on the sum of the powers of the roots n		26
L.3.3	Transformation of equations		28
L.3.4	Roots with sign changed		32
L.3.5	Roots multiplied by a given number - Reciprocal equations.		34
L.3.6	problems		36
<b>UNIT IV – TRANSFORMATION OF EQUATIONS</b>			
L.4.1	Increase or decrease the roots of a given equation by a given quantity	Students are able to Understand the	36

L.4.2	Removal of terms	Concept of roots and to find the root if any equations is given.	40
L.4.4	Square of the roots		43
L.4.5	Transformations in general		45
L.4.6	Descarte's rule of signs - problems.		46
<b>UNIT V - TRIGONOMETRY</b>			
L.5.1	Expansions of $\sin n\theta$ , $\cos n\theta$ and $\tan n\theta$	Students are able to Expand trigonometric functions and also find the summation of T-series	46
L.5.2	Expansions of $\sin\theta$ , $\cos\theta$ and $\tan\theta$ in terms of $\theta$		49
L.5.3	Hyperbolic and inverse hyperbolic functions		51
L.5.4	and their properties		54
L.5.5	Logarithm of a complex number		56
L.5.6	General principal values - problems..		60
	Tutorial		
LAST WORKING DAY:			

### TEXT BOOKS

1. T. K. Manickavasagam Pillai, Natarajan and Ganapathy, Algebra, Volume II, S.Viswanathan Pvt. Ltd., 2004.
2. S. Narayanan and T. K. Manickavachagam Pillai, Trigonometry, S. Viswanathan Printers & Publishers, (Reprint), 2012.

### REFERENCES

1. T.K.Manickavachagam Pillai, Matrices, S.Viswanathan Printers & Publishers, 2012.
2. S. Sudha, Algebra, Analytical Geometry (2D) and Trigonometry, Emerald publishers, 1998.
3. P. Duraipandian, Trigonometry, Emerald publishers, 2009.
4. A. Singaravelu, Algebra & Trigonometry, Vol. I & II, Meenakshi Agency, 2003.

Internal marks Total: 50

Internal marks split up: Cycle Test1: 10 Marks  
Cycle Test2: 10 Marks

Model Exam: 20 Marks  
Surprise Test: 5 Marks

Attendance: 5 Marks