

No.	Title		
1.	Subject	Algebra	
2.	Subject Code	KE012	
3.	Status	Major	
4.	Credit Hours	Two (2) [(1.5L + 1T) × 14 weeks]	
5.	Semester and Year	Semester 1	
6.	Pre-requisite	-	
7.	Mode of Delivery	Lectures and tutorials	
8.	Assessment	Assignments	20%
		Class Test	20%
		Final Examination	60%
9.	Objectives	<p>1. To provide the student with a firm foundation in the mathematics needed to cope with the demand of the following years of his/her degree course.</p> <p>2. To encourage the student to develop the study skills appropriate to the mastery of the basic principles of algebraic operations.</p> <p>3. To enable the student to apply these principles with confidence to problem solving appropriate to his/her course.</p>	
10.	Learning Outcomes	<p>Upon the completion of the unit, the students will be able to:</p> <p>1. Manipulate, simplify and factorize algebraic expressions.</p> <p>2. Solve linear and quadratic equations, including two simultaneous equations.</p> <p>3. Use logarithms and exponents.</p> <p>4. Use binomial theorem.</p>	
11.	Details of subject	Contents	Hours
		Chapter 1: Algebraic Operation	
		Indices. Standard form. Integral exponents. Properties of integral exponents. Use of the calculator. Integral roots and rational exponents. Radicals. Polynomials. Properties of polynomials. Degree of polynomials.	3L 2T
		Chapter 2: Linear Equations	
		Equations involving fractions. Manipulation of algebraic expressions. Rational expressions. Factorising. Simple equations and formulae. Transposition of formulae.	3L 2T
		Chapter 3: Factorising quadratic expressions and completing the square	
		Solution of quadratic equations. Rationalisation of fractions. Simple algebraic inequalities and their interpretation. Properties of inequalities. Solving linear inequality. Inequalities with absolute values, applications on inequalities.	3L 2T

		Chapter 4: Simultaneous equation in two unknowns 2 x 2 and 3 x 3 determinants. Logarithms, properties of logarithms, natural logarithms, application problems on logarithms. Binominal theorem for $(1 + x)^n$ and $(a + b)^n$ with integral fractional powers. Sigma notation.	4.5L 3T
		Chapter 5: The concept of matrices Addition, subtraction, multiplication by a scalar, and vector multiplication for two matrices.	1.5L 1T
		Chapter 6: The concept of a complex number and its representation on the complex plane Addition, subtraction, multiplication. The complex conjugate. Division. Polar forms a complex number. Conversion from polar to Cartesian form and vice-versa.	6L 4T
		Total	L = 21 hrs T = 14 hrs 35 hours
12.	Main Reference	1. Berry, J., & Wainwright, P. (1991). <i>Foundation Mathematics for Engineers</i> . UK: Palgrave Macmillan.	
13.	Additional Reference	1. Haeussler, E. F. Jr., Paul, R. S., & Wood, R. (2005). <i>Introductory Mathematical Analysis</i> (11 th ed.). Prentice Hall. 2. Croft, A., & Davison, R. (1999). <i>Mathematics for Engineers</i> . Prentice Hall.	
14.	Practical/Lab Classes	Not applicable	