	Teaching Plan	
	Teaching Plan FAKULTI KEJURUTERAAN ELEKTRIK UNIVERSITI TEKNIKAL MALAYSIA MELAKA	
	ALGEBRA & CALCULUS	
BEKA 1123	**SEMESTER 1**	**SESSION 2011/2012**

1. Learning Outcomes

Upon completion of this subject, the student should be able to:

1 Use the properties, determinant and inverse of matrix to solve systems of linear equations. (PO1, PO4, C3, CTPS3)

2 Apply the properties of trigonometry function to solve trigonometry problem. (PO1, PO4, C3, CTPS3)

3 Apply the properties and the operations of complex numbers. (PO1, PO4, C3, CTPS3)

4 Solve derivatives of algebraic, logarithmic, trigonometric and exponential functions. (PO1, PO4, C3, CTPS3)

5 Solve integrals of algebraic, logarithmic, trigonometric and exponential functions. (PO1, PO4, C3, CTPS3)

2. Synopsis

This subject serves as fundamental mathematics course for electrical engineering students. This subject is classified into two parts. The first part on Linear Algebra; will discuss about Matrices & Solving a System of Linear Equation, Trigonometry and Complex Numbers. The second part on Calculus; will focus about Differentiation & Integration with deep understanding.

3. Pre requisite

4. References

[1] Irma et al, Linear Algebra & Calculus Module, Penerbit UTeM (2011)

[2] Abd. Wahid et. al, Intermediate Mathematics, UTM, (2009)

[3] Tay Choo Chuan et. al,Introduction to Linear Algebra, Penerbit UTeM, (2010)

[4] Robert Blitzer, Algebra and Trigonometry, Prentice Hall, (2010)

5. Subject Implementations

i	Lectures - 3 hours per week for 14 weeks (Total = 42 hours)
ii	Tutorials - 1 hour per week for a total of 4 - 6 weeks (Total = 4 to 6 hours)

6. Subject Evaluations

Assessment*	Marks
Quiz	10%
Test 1	15%
Test 2	15%
Assignment	10%
Final Examination	50%
Total	**100%**

7. Detail Syllabus and Delivery Planning

Note: 1. Tutorial sessions (1h): 4 to 6 weeks throughout the semester
2. Test 1 (Week 6-8); Test 2 (Week 10-12)

Week	Contents	Ref.
1		[1],[3],[4]
	Chapter 1: Matrices and Systems of Linear Equations	
	• Matrix Operations	
	• Determinants	
2	• Inverse of Matrix	
	• Solving a System of Linear Equations:	
	- Inverse Matrix Method	
	- Cramer's Rule	
	- Gaussian Elimination Method	
	- Gauss-Jordan Elimination Method	
3	• Matrix Eigenvalue Problems	
4		[1],[3],[4]
	Chapter 2: Trigonometry	
	• Angles, Radians, Degrees	
	• Sine, Cosine, Tangent and the Reciprocal Ratios	
	• Fundamental Trigonometric Identities	
5	• Sum and Difference of Two Angles	
	• Double- Angle Formulas	
	• Half- Angle Formulas	
	• Solving Trigonometric Equations	
	• The Inverse Trigonometric Functions	
6	• Graphs of the Trigonometric Functions	
		[1],[3],[4]
	Chapter 3: Complex Numbers	
	• Imaginary Numbers	
7	• Properties of Complex Numbers	
	• Complex Number in Trigonometry Form	
	• Complex Number in Exponential Form	
	MID SEMESTER BREAK	
8	**Chapter 3: Complex Numbers**	[1],[3],[4]
	• Powers of Complex Numbers	
	• Roots of Complex Numbers	
9		[1],[2]
	Chapter 4: The Derivative	
	• The geometrical Meaning of Differentiation	
	• Differentiation of Simple Algebraic Function Differentiation Rules	
	• The Chain Rule	
10	• Differentiation of Trigonometric Functions	
	• Differentiation of Logarithmic Functions	
	• Differentiation of Exponential Functions	
	• Differentiation of Implicit Functions	
	• Differentiation of Parametric Functions	
11		
12		[1],[2]
	Chapter 5: Integration	
	• Anti Derivatives and Indefinite Integrals	
	• Algebra of Indefinite Integrals	
	• The Fundamental Theorem of Calculus	
13	• Techniques of integration: Substitution	
	• Integration by Parts	
	• Tabular Method	
	• Techniques of integration:	
	• Integrating Rational Functions by Partial Fraction	
	• Integration of Trigonometric Functions	
14		
	REVISION WEEK	
	EXAMINATION WEEK	