

No.	Title		
1.	Subject	Differential Calculus	
2.	Subject Code	KE014	
3.	Status	Major	
4.	Credit Hours	Two (2) [2(1.5 L + 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	1. To provide the student with a foundation in the study of differentiation, with particular emphasis on their application to engineering related problems.	
10.	Learning Outcomes	<p>Upon completion of the unit, the students will be able to:</p> <ol style="list-style-type: none"> 1. Understand the basic concepts on differentiation; 2. Differentiate various functions using different techniques of differentiation; 3. Apply differentiation to engineering related problems. 	
11.	Details of subject	Contents	Hours
		Chapter 1 : Functions Functions and the analysis of graphical information. Properties of functions. Mathematical models.	3L 2T
		Chapter 2 : Limits and continuity An intuitive introduction. Computational techniques of limits. L' Hopital's rule. Continuity.	4.5L 3T
		Chapter 3: The Derivative Tangent lines and rate of change. The derivative	3L 2T
		Chapter 4: Techniques of Differentiation First principle. Product rule. Quotient rule. Chain rule. Logarithmic differentiation. Differentiation of trigonometric functions	4.5L 3T
		Chapter 5: Analysis of Functions and graphs Increase, decrease and concavity. Relative extrema. First and second derivative tests.	3L 2T
		Unit 6: Applications of derivative Absolute maximum and minimum problems. Rolle's theorem. Mean value theorem.	3L 2T
		Total	L = 21 hrs T = 14 hrs 35 hours
12.	Main Reference	<ol style="list-style-type: none"> 1. Berry, J., & Wainwright, P. (1991). <i>Foundation Mathematics for Engineers</i>. UK: Palgrave Macmillan. 2. Anton, H. (2000). <i>Calculus</i> (8th ed.). John Wiley and Sons. 	

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

