

Course Code: BA101	Course Title: Calculus I	Classification: R	Coordinator's Name: Dr. Adel Elrfaay	Credit: 3
Pre-requisites: None “for students of mathematics section”, OR BA003 (Math 0) "for students of science section"	Co-requisites: None	Schedule: Lecture 2 hrs. Tutorial/Lab 2 hrs.		
Course Description: This course provides basic rules of differentiation, trigonometric function and their derivatives, inverse of trigonometric and their derivatives, logarithmic function and their derivatives, exponential function and their derivatives, derivatives of hyperbolic functions and their inverse, parametric differentiation and implicit differentiation. Application of differentiation: the nth derivatives, l'Hopital rule, partial Differentiation, Taylor and Maclaurin's expansions, complex numbers and conic sections.				
Textbook: Sherman K.Stein, Anthony Barcellos, <i>Calculus & Analytic Geometry</i> , McGraw-Hill Higher Education.				
References: James Stewart, <i>Calculus</i> , Brooks Cole.				
Course Objective/Course Learning Outcome:		Contribution to Program Student Outcomes:		
1. Differentiate certain types of functions (trigonometric functions and their inverse, exponential function, and logarithmic function).		(SO1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.		
2. Understand and use the applications of differentiation (l'Hopital, Taylor and Maclaurin's expansions).		(SO1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions. (SO3) Communicate effectively in a variety of professional contexts.		

Course Outline: 1. Basic rules of differentiation. 2. Trigonometric function and their derivatives 3. Inverse of trigonometric and their derivatives 4. Logarithmic function and their derivatives 5. Exponential function and their derivatives 6. Derivatives of hyperbolic functions and their inverse 7. Parametric differentiation, Implicit differentiation and 7 th week exam	8. The n th derivatives 9. L'Hospital rule 10. Partial Differentiation 11. Maclaurin's expansions 12. Physical application 13. Curve sketching 14. Conic sections
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