

Course Title	CALCULUS I
Course Code	MAT 111
Course Purpose and Objectives	The purpose of this course is to extend students' experience with functions by studying the fundamental concepts of calculus: limiting behaviours, difference quotients and the derivative. Students will review and extend their knowledge on trigonometry and basic analytic geometry and they will develop and strengthen problem-solving skills. They will learn to read, write, speak, and think in the language of mathematics.
Learning Outcomes	<ol style="list-style-type: none"> 1. Identify real valued functions and their properties. 2. Compute the inverse of a function. 3. Explain the meaning of the limits. 4. Calculate the limit of different type of functions. 5. Compute the derivatives of functions. 6. Determine absolute extrema for a continuous function on a closed interval. Use these and other appropriate techniques to solve optimization problems.
Course Content	<ul style="list-style-type: none"> • Pre-calculus preliminaries • Inequalities • FUNCTIONS • LIMITS AND CONTINUITY • Limits (an intuitive introduction) • Limits (computer techniques) • <i>Continuous functions</i> • PART A THE DERIVATIVE • <i>Slopes, tangent lines and derivatives</i> • <i>Techniques of differentiation</i> • Derivatives of the trigonometric functions – $\sin x$, $\cos x$, $\tan x$, $\cot x$, $\sec x$ and $\csc x$ • PART THE DERIVATIVE B • <i>The chain rule</i> • APPLICATION OF THE DERIVATIVE • Mean-Value Theorem