

## **RMT 112 CALCULUS**

### **OBJECTIVES**

To give students a formal study of the foundations of mathematics which have been approached very intuitively and to introduce them to the limit concept of analysis

#### **Learning outcomes:**

At the end of the course the student should be able to

1. Describe the concept of function and its domain and range
2. Calculate the limit of function at a given point
3. Perform both analytical and numerical differentiation and integration of functions of one or more variables.

### **MODULE CONTENT**

**Functions and Graphs.** Coordinates and lines, circles and graphs of equations, functions and graphs of functions (10%)

**Differential calculus.** Limits and continuity, the derivative and differentiation, Extreme function values, techniques of graphing (40%)

**Integral calculus.** The definite integral and integration, inverse functions, logarithmic and exponential functions, inverse trigonometric functions, techniques of integration, indeterminate forms and Taylor's formula, sequences and infinite series of constant terms, Power series (50%)

#### **Text/reference books:**

Leithold Louis, *The calculus with Analytic Geometry*, Harper International Edition

Karplan, Wilfred & Lewis, D. J, *Calculus and Linear*, John Wiley & Sons

Apostol, T, *Calculus Volume II*, John Wiley & Sons

Spiegel, M. R., *Advanced & Calculus*, Schaum Series, McGraw Hill Book Company