**CALCULUS 3 (S)**

**MT201S / NUIM / School of Mathematics and Statistics**

Module Objective:

To introduce the student to multivariable differential calculus.

Vectors, especially in low dimensions. Vector addition. Dot product. Vector product in R 3 . Solid analytic geometry. Lines, planes and spheres. Calculus of several variables, especially in two and three dimensions. Functions of two or more variables. Graphs. Limits. Continuity. Partial derivatives. Gradient. Tangents and normals. Max-min. Lagrange multipliers. Computation using mathematical computing software.

On successful completion of the module, students should be able to:

•Find products of vectors and use these to solve simple geometrical problems.

•Draw the level curves for a function of two variables.

•Obtain the partial derivatives and gradient vector of a function.

•Obtain tangents and normals to surfaces.

•Solve max-min problems in several variables.