**APPLIED CALCULUS II**

*MATH 114 : 4 Credit hours (3 lectures, 0 lab, 2 exercises)*

**Prerequisites:**
*MATH 113*

**Objectives:**
- To study infinite series and applications.
- To introduce students to calculus of functions of two and three variables.
- To study parametric equations and polar coordinates.
- To study techniques of double and triple integration.

**Course Description:**
This Course Teaches Applied Calculus Part Two.

**Contents:**
- Sequences and limit of a sequence;
- Infinite series of constant terms, convergence tests, alternating series and absolute convergence. Power series, the ratio test, and radius of convergence; differentiation and integration of power series. Taylor and Maclaurin series; Taylor expansion of differentiable functions.
- Functions of several variables: limits and continuity, partial derivatives, directional derivatives, the total derivative. The gradient of a scalar function; chain rule. Maxima and minima and their tests.
- Polar coordinates and polar graphs; conic sections, parametric equations; curves in the plane and in space; and lines and planes in space.
- Double and triple integration; areas and volumes; Change of variables in multiple integrals. Improper integrals.

The instructor should stress on using mathematical software throughout the course.

**References:**
- *CALCULUS*, By Larson, Hostetler & Edwards Publisher: Houghton Mifflin.