| Math 1002 | CALCULUS-II | (CR3) |
|---|---|---|
| Preq. | Math 1001 | |

**Objectives**

*The students would be presented to the vector calculus, the calculus of multivariable functions and double and triple integrals along with their applications.*

**Syllabus**

Vectors and analytic geometry in space, coordinate system, rectangular, cylindrical and spherical coordinates, the dot product, the cross product, equations of lines and planes, quadric surfaces, vector-valued functions and space curves, derivatives and integrals of vector valued functions, arc length, curvature, normal and binormal vectors, functions of several variables, limits and continuity, partial derivatives, composition and chain rule, directional derivatives and the gradient vector, implicit function theorem for several variables, maximum and minimum values, optimization problems, lagrange multipliers, double integrals over rectangular domains and iterated integrals, non-rectangular domain, double integrals in polar coordinates, triple integrals in rectangular, cylindrical and spherical coordinates, applications of double and triple integrals, change of variables in multiple integrals.

***Recommended Books***

1. *Calculus by Thomas (11th Edition), Addison Wesley (2005)*
2. *Calculus by H. Anton, I. Bevens, S. Davis (8th Edition), John-Wiley (2005)*
3. *Calculus Single and Multivariable by D. H. Hallett,* A. *M. Gleason,* W. *G. McCallum (3rd Edition) John Wiley (2002)*
4. *Calculus and Analytics Geometry by C. H. Edward and E.D Penney, Prentice Hall (1988)*