MANIPAL UNIVERSITY JAIPUR

School of Basic Sciences

Department of Computer Applications

Course Hand-out

MATHEMATICS-II | MA1222 | 4 Credits | 3 1 0 4

Session: Jan. – June 2018| Faculty: Dr. Garima Agarwal | Course: BCA II Sem

COURSE OUTCOMES: At the end of the course, students will be able to

[1222.1]. Solve problems related to differential calculus-successive diff., curvature etc.

[1222.2]. Understand the basic concept of linear algebra-Matrices, operations, determinant etc.
[1222.3]. learn the method to solve system of linear equations by using matrix method
[1222.4]. Solve problems related to inverse and rank of the matrix which enhances their analytical skills and help them to be employable.
[1222.5]. Understand the basic concept of infinite series, Taylors and Maclaurin's method of expansion etc.

A. SYLLABUS

Differential Calculus: Successive differentiation, Leibnitz's theorem, polar curve, angle between radius vector and tangent, angle of intersection between two curves, derivative of arc (Cartesian and polar), curvature, radius of curvature, evolute, related problems. Rolle's Theorem, mean value theorem (Cauchy's and Lagrange's), in determinant form, partial derivatives, Euler's theorem, maxima and minima of functions of two variables. **Linear Algebra:** Basic concepts, matrix addition, scalar multiplication, matrix multiplication, linear system of equations, Gauss elimination, rank of a matrix, **Solution of Linear Systems:** Existence, uniqueness, determinants, Cramer's rule, inverse of a matrix, Gauss-Jordan elimination. **Infinite Series:** Convergence, divergence, comparison test, ratio test, Cauchy's root test, Cauchy's integral test, alternating series, Leibnitz's theorem, absolute and conditional convergence, expansion of functions into Taylor's and Maclaurin's series.

B. TEXT BOOKS

1. Shanti Narayan, "*Differential calculus*", S. Chand & Co, Delhi, 2012.
2. Shanti Narayan, "*Integral calculus*", S. Chand & Co, Delhi, 2012.
3. M.D. Raisinghania, et.al, "*Differential calculus*", Delhi, 2010.
4. Das Mukherjee, *"Integral Calculus"*, U.N. Dhur, 1977.
5. N. Piskunov, *"Differential and integral calculus"*, Vol I & Vol II, CBS, 2000.