

NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	B. Tech. (All Programme)
Course Code:	
Course Title:	Mathematics II
Course Type:	Introductory
Year of introduction:	2022-2023

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Course Learning Outcomes (CLOs):

At the end of the course, the students will be able to –

1. distinguish between different kind of infinite series (BL2)
2. use multivariable differential calculus to solve real world problems (BL3)
3. identify special functions and its applications (BL1)
4. apply multivariable integral calculus to solve engineering problems (BL3)

Syllabus:

Total Teaching hours: 30

Unit	Syllabus	Teaching hours
Unit I	Infinite Series: Convergence of series, tests for convergence, power series, Maclaurin's and Taylor's series, Series for exponential, trigonometric and logarithmic functions.	07
Unit II	Multivariable Differential Calculus: Limit, continuity and partial derivatives, total derivative and chain rule, Euler's theorem, Maclaurin's and Taylor's series in two variables, Tangent plane and normal line, Maxima and minima of a function of two variables, Method of Lagrange multipliers.	07
Unit III	Integral Calculus: Evaluation of definite and improper integrals, Beta and Gamma functions and their properties, Applications of definite integrals to evaluate surface areas and volumes of revolutions.	07
Unit IV	Multivariate Integral Calculus: double and triple integrals, change of order of integration in double integrals, Change of variables, Applications: area by double integration and volume by triple integration.	09

Tutorial Works:

This shall consist of 10 tutorials based on the syllabus.

Self-Study:

Self-study contents will be declared at the commencement of the semester. Around 10 % of the questions will be asked from the self-study contents.

Suggested Readings/ References:

1. G B Thomas and R L Finney, Calculus and Analytic geometry; Pearson
2. T Veerarajan, Engineering Mathematics; McGraw-Hill
3. B V Ramana, Higher Engineering Mathematics; McGraw-Hill
4. B S Grewal, Higher Engineering Mathematics; Khanna Publishers
5. E Kreyszing, Advanced Engineering Mathematics; John Wiley & Sons
Iyenger
6. N P Bali and M Goyal, A text book of Engineering Mathematics; Laxmi
Publications