# VIKASH INSTITUTE OF TECHNOLOGY, BARGARH
## LESSON PLAN

| Semester:2nd | Year: 2025 | | Course: B.Tech |
|---|---|---|---|
| | Sub: MATHEMATICS-II | | Total Credit:03 |
| Branch : ALL | Sub Code : | | |
| Name of the Faculty: | TULASI GOUD | | |
| Designation : | ASSISTANT PROFESOR | | |
| Department : | BSH | | |
| Session | 2024-25 | | |
| **Recommended Books** | **Text book**: | | |
| | 1.Erwin Kreyszig, Advanced Engineering Mathematics | | |
| | 2.E.M. Stein, Fourier Analysis: An Introduction | | |
| | **Reference Books**: | | |
| | 1.Veerarajan T., Engineering Mathematics for first year, | | |
| | 2.S. L. Ross, Differential Equations, 3rd Edition, Wiley India, | | |

| Sl. No. | Lecture No. | Topics to be covered | No. of Classes |
|---|---|---|---|
| | | **MODULE-1** | |
| 1 | Lecture-01 | First order ODE : Exact ODEs. | |
| 2 | Lecture-02 | Integrating factors. | |
| 3 | Lecture-03 | Linear first order ODEs. | |
| 4 | Lecture-04 | Nonlinear first order ODE and Bernoulli's equations | |
| 5 | Lecture-05 | Applications to Population growth | 8 |
| 6 | Lecture-06 | Newton's law of cooling, RL circuit | |
| 7 | Lecture-07 | Second order linear differential equations with constant coefficients, | |
| 8 | Lecture-08 | Euler-Cauchy equations, | |
| | | **MODULE-2** | |
| 9 | Lecture-09 | method of undetermined coefficients, | |
| 10 | Lecture-10 | solution by variation of parameters. | |
| 11 | Lecture-11 | Power series solutions of ODE. | |
| 12 | Lecture-12 | Legendre's equations (explicit solution only). | |
| 13 | Lecture-13 | Vector Calculus : | |
| 14 | Lecture-14 | Vector and Scalar Functions and Fields, | 10 |
| 15 | Lecture-15 | Derivatives, Gradient of a Scalar Field, | |
| 16 | Lecture-16 | Directional Derivative, | |
| 17 | Lecture-17 | Divergence of a Vector Field, | |
| 18 | Lecture-18 | Curl of a Vector Field, | |

| | | MODULE-3 | |
|---|---|---|---|
| 19 | Lecture-19 | Line Integrals, | |
| 20 | Lecture-20 | Path Independence of Line Integrals, | |
| 21 | Lecture-21 | ,Double Integrals | |
| 22 | Lecture-22 | Green's Theorem in the Plane (Statement and applications) | |
| 23 | Lecture-23 | Complex Analysis : | 9 |
| 24 | Lecture-24 | Limit, | |
| 25 | Lecture-25 | Continuity, | |
| 26 | Lecture-26 | Derivative, | |
| 27 | Lecture-27 | Analytic Function, | |
| | | MODULE-4 | |
| 28 | Lecture-28 | Cauchy-Riemann Equations, | |
| 29 | Lecture-29 | Laplace's Equation, | |
| 30 | Lecture-30 | Exponential Function, | |
| 31 | Lecture-31 | Trigonometric and logarithm functions. | |
| 32 | Lecture-32 | Line Integral in the Complex Plane, | 10 |
| 33 | Lecture-33 | Cauchy's Integral Theorem, | |
| 34 | Lecture-34 | Cauchy's Integral Formula, | |
| 35 | Lecture-35 | Derivatives of Analytic Functions, | |
| 36 | Lecture-36 | Laurent series, | |
| 37 | Lecture-37 | Residue theorem with simple problems. | |

**Signature of Faculty Member**                                            **Signature of HOD**


**PRINCIPAL**