

**GOPAL KRISHNA COLLEGE OF ENGINEERING & TECHNOLOGY**  
**GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005**

**LESSON PLAN**

**Name of the Subject:** Mathematics-I

**Name of the Faculty:** Mohit Kumar Aruk

**Semester:** 1<sup>st</sup> Semester

**Branch:** All

**Semester From:** Sep to December

**No. of Weeks:** 14 Weeks

Week	Day	Theory/ Practical Topics	Classes
		<b>Unit 1 – Basic Calculus</b>	10
1	1	Applications of definite integrals.	1
	2	Definite Integrals	1
	3	Evaluate the Length of curves.	1
	4	areas of surfaces and volumes	1
2	5	areas of surfaces of revolution,	1
	6	Defination of Integral	1
	7	Improper integral	1
	8	Definition and Elementary Examples	1
	9	Beta and Gamma functions	1
	10	Beta and Gamma functions and their properties.	1
		Unit 2- Single-variable Calculus	08
3	11	Single-variable Calculus	1
	12	Differentiation	1
	13	Rolle's Theorem	1
	14	Statement and applications of mean value theorem	1
4	15	Mean value theorem	1
	16	First derivative test for local extreme values of functions	1
	17	Taylor series.	1
	18	Taylor series and Maclaurin series.	1
		. Unit-3 Multivariable Calculus	08
6	19	Differentiation	1
	20	Partial derivatives	1
7	21	Examples of Partial derivatives	1

	22	Jacobians method	1
	23	Hessian Matrix, concepts properties and Applications	1
	24	Hessian Matrix, multivariable and calculus	1
8	25	Maxima, Minima	1
	26	saddle points.	1
	27	Method of Lagrange multipliers.	1
		<b>Unit 4 – Linear Algebra:</b>	09
9	28	Linear Algebra:.	1
	29	Vector Space	1
	30	Basis and dimension	1
	31	Linear Systems of Equations,	1
11	32	Gauss elimination	1
	33	Linear Dependence	1
	34	Linear Independence	1
	35	Linear Dependence and Independence	1
	36	Rank of a Matrix	1
		<b>Unit 5- Linear Algebra:</b>	10
12	37	Linear Algebra: Inverse of a matrix (Gauss-Jordan). Symmetric, skew-symmetric and orthogonal matrices. Eigen values and eigenvectors. Caley-Hamilton Theorem (Statement only)	1
	38	Inverse of a matrix	1
	38	Gauss-Jordan	1
	39	Symmetric, and examples	1
13	40	skew-symmetric examples	1

	41	Different between Symmetric and skew-symmetric and examples	1
	42	skew-symmetric and orthogonal matrices	1
	43	Eigen values and eigenvectors	1
14	44	Eigen values and eigenvectors and examples.	1
	45	Caley-Hamilton Theorem (Statement only)	1

### **RECOMMENDED BOOKS**

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, 2002.
2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.