LECTURE PLAN

Name of the Faculty:	**Ms. Punam Kalra**
Discipline:	**Computer Science Engineering, CS-AIML, Civil Engineering**
Semester:	**1st**
Subject:	**Mathematics-I (B24-BSC-107)**
Course Outcomes(COs):	**CO1- To introduce the idea of applying differential and integral calculus to notions of improper integrals. Apart from some applications it gives a basic introduction of Beta and Gamma functions.** **CO2- To develop the tool of series for learning advanced Engineering Mathematics.** **CO3- To familiarize the student with calculus (derivative) of the functions of several variables that is essential in most branches of Engineering.** **CO4- To familiarize the student with calculus (integration) of the functions of several variables.** **CO5- To test the convergence of an infinite series and express a function in terms of power series.** **CO6- To develop the knowledge of differentiation in many variables used in machine learning, optimization algorithm and modelling physical phenomenon.**
Work Load (Lecture/Practical) per week (In hours):	**04 Lectures + 02 Tutorials= (06 hours)**

S.No.	Lecture No.	Topic (Including Assignment/Test/Quiz/Activity)	Pedagogy (PPT/Video Lecture/Chalk/Case-Study etc.)	Course Outcome
1	L 1	Introduction to Definite and Improper Integrals	Lecture / chalk	CO1
2	L 2	Evaluation Techniques for Definite Integrals	Lecture / chalk	CO1
3	L3	Improper Integrals: Concepts and Examples	Lecture / chalk	CO1
4	L4	Beta Functions: Definition and Properties	Lecture / chalk	CO1
5	L5	Gamma Functions: Definition and Properties	Lecture / chalk	CO1
6	L6	Applications of Definite Integrals: Surface Areas	Lecture / chalk	CO1
7	L7	Applications of Definite Integrals: Volumes of Revolution	Lecture / chalk	CO1
8	L8	Indeterminate Forms and L'Hospital's Rule	Lecture / chalk	CO1
9	L9	Introduction to Sequences and Series	Lecture / chalk	CO2,5
10	L10	Convergence of Series and Sequence	Lecture / chalk	CO2,5
11	L11	Comparison Test and D'Alembert's Ratio Test	Lecture / chalk	CO2,5
12	L12	Logarithmic Test and Cauchy Root Test	Lecture / chalk	CO2,5
13	L13	Raabe's Test	Lecture / chalk	CO2,5
14	L14	Introduction to Fourier Series	Lecture / chalk	CO2

			Lecture / chalk	
15	L15	Fourier-Euler Formula		CO2
16	L16	Dirichlet's Conditions for Fourier Series	Lecture / chalk	CO2
17	L17	Fourier Series with Change of Interval	Lecture / chalk	CO2
18	L18	Fourier Series for Even and Odd Functions	Lecture / chalk	CO2
19	L19	Half Range Sine and Cosine Series	Lecture / chalk	CO2
20	L20	Introduction to Multivariable Calculus (Differentiation)	Lecture / chalk	CO3
21	L21	Taylor's Series for One Variable	Lecture / chalk	CO3
22	L22	Taylor's Series for Multiple Variables	Lecture / chalk	CO3
23	L23	Series Expansions: Exponential, Trigonometric, Logarithmic	Lecture / chalk	CO3
24	L24	Partial Derivatives and Total Differential	Lecture / chalk	CO3,6
25	L25	Chain Rule for Multivariable Differentiation	Lecture / chalk	CO3,6
26	L26	Homogeneous Functions and Euler's Theorem	Lecture / chalk	CO3,6
27	L27	Jacobians	Lecture / chalk	CO3,6
28	L28	Maxima, Minima, and Saddle Points	Lecture / chalk	CO3,6
29	L29	Lagrange Multipliers Method	Lecture / chalk	CO3,6
30	L30	Introduction to Multivariable Integration	Lecture / chalk	CO4

31	L31	Double Integrals in Cartesian Coordinates	Lecture / chalk	CO4
32	L32	Change of Order in Double Integration	Lecture / chalk	CO4
33	L33	Change of Variables: Cartesian to Polar	Lecture / chalk	CO4
34	L34	Area Applications of Double Integrals	Lecture / chalk	CO4
35	L35	Volume Applications of Double Integrals	Lecture / chalk	CO4
36	L36	Triple Integrals in Cartesian Coordinates	Lecture / chalk	CO4
37	L37	Orthogonal Curvilinear Coordinates	Lecture / chalk	CO4
38	L38	Applications of Triple Integrals to Volumes	Lecture / chalk	CO4
39	L39	Integration over Cubes and Spheres	Lecture / chalk	CO4
40	L40	Integration over Rectangular Parallelepipeds	Lecture / chalk	CO4