

# **PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY**

## **Department of Electronics & Communication Engineering**

### **LESSON PLAN**

**Subject Name: - Applied and Computational Mathematics**

**Subject Code: - BS-207A**

**Year: - 2nd**

**Semester: - 4th**

Lecture No	Unit No	Topic	References
L1	Unit-1	First order ordinary differential equations	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L2	Unit-1	Leibnitz linear equation	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L3	Unit-1	Bernoulli's Equation	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L4	Unit-1	Exact differential equation	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L5	Unit-1	Equation reducible to exact differential equation	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L6	Unit-1	Equation reducible to exact differential	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-

		equation	II, Wiley India Publication, Reprint, 2015.
L7	Unit-1	Equations solvable for p, x,y and Clairut;s equation	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L8	Unit-1	Equations solvable for p, x,y and Clairut;s equation	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L9	Unit-1	Equations solvable for p, x,y and Clairut;s equation	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L10	Unit-1	Second order differential equation with constant coefficients	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L11	Unit-1	Second order differential equation with constant coefficients	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L12	Unit-1	Second order differential equation with constant coefficients	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L13	Unit-1	Method of variation of parameter	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L14	Unit-1	Formation of Partial Differential Equations	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.

L15	Unit-1	Solutions of first order linear and non-linear PDEs	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L16	Unit-1	Solutions of first order linear and non-linear PDEs	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L17	Unit-1	Charpit's method	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L18	Unit-1	Solution to homogenous linear partial differential equations (with constant coefficients) by complimentary function and particular integral method	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L19	Unit-1	Solution to homogenous linear partial differential equations (with constant coefficients) by complimentary function and particular integral method	Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
L20	Unit-2	Double integrals (Cartesian),.	Higher Engineering mathematics by Dr. B.S. Grewal
L21	Unit-2	change of order of integration in double integrals	Higher Engineering mathematics by Dr. B.S. Grewal
L22	Unit-2	change of order of integration in double integrals	Higher Engineering mathematics by Dr. B.S. Grewal
L23	Unit-2	Change of variables (Cartesian to polar and polar to cartesian)	Higher Engineering mathematics by Dr. B.S.

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L24	Unit-2	Change of variables (Cartesian to polar and polar to cartesian)	Higher Engineering mathematics by Dr. B.S. Grewal
L25	Unit-2	Triple integrals (Cartesian)	
L26	Unit-2	orthogonal curvilinear coordinates, Simple applications involving cubes, sphere	
L27	Unit-3	Gradient, divergence and Curl and their properties, Directional derivative.	Higher Engineering mathematics by Dr. B.S. Grewal
L28	Unit-3	Gradient, divergence and Curl and their properties, Directional derivative.	Higher Engineering mathematics by Dr. B.S. Grewal
L29	Unit-3	Gradient, divergence and Curl and their properties, Directional derivative.	Higher Engineering mathematics by Dr. B.S. Grewal
L30	Unit-3	Gradient, divergence and Curl and their properties, Directional derivative.	Higher Engineering mathematics by Dr. B.S. Grewal
L31	Unit-3	Line integral, surface integral, Volume integral	Higher Engineering mathematics by Dr. B.S. Grewal
L32	Unit-3	Line integral, surface integral, Volume integral	Higher Engineering mathematics by Dr. B.S. Grewal
L33	Unit-3	Green's theorem	Higher Engineering mathematics by Dr. B.S. Grewal
L34	Unit-3	Stoke's theorem	Higher Engineering mathematics by Dr. B.S. Grewal

L35	Unit-3	Gauss Divergence theorem	Higher Engineering mathematics by Dr. B.S. Grewal
L36	Unit-3	Laplace Transform of Elementary Functions Convolution theorem	Higher Engineering mathematics by Dr. B.S. Grewal
L37	Unit-3	Basic properties of Laplace Transform	Higher Engineering mathematics by Dr. B.S. Grewal
L38	Unit-3	Basic properties of Laplace Transform	Higher Engineering mathematics by Dr. B.S. Grewal
L39	Unit-3	Laplace transform of periodic functions	Higher Engineering mathematics by Dr. B.S. Grewal
L40	Unit-3	finding inverse Laplace transform by different methods	Higher Engineering mathematics by Dr. B.S. Grewal
L41	Unit-3	Solving ODEs by Laplace Transform method	Higher Engineering mathematics by Dr. B.S. Grewal
L42	Unit-4	Bisection method	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L43	Unit-4	Regula-Falsi method	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L44	Unit-4	Newton-Raphson method	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005

L45	Unit-4	Newton-Raphson method	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L46	Unit-4	Lagrange's formulae.	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L47	Unit-4	Finite differences	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L48	Unit-4	Numerical Differentiation using Newton's forward and backward difference formulae,	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L49	Unit-4	Numerical Differentiation using Newton's forward and backward difference formulae,	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L50	Unit-4	Numerical integration: Trapezoidal rule and Simpson's 1/3 <sup>rd</sup> rule	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L51	Unit-4	Taylor's series method	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005
L52	Unit-4	Runge-Kutta method for solving first and second order equations.	S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005

Textbooks/References:

1. Erwin Kreyszig and Sanjeev Ahuja, Applied Mathematics-II, Wiley India Publication, Reprint, 2015.
2. Higher Engineering mathematics by Dr. B.S. Grewal.
3. E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall India, 1995.
4. G.F. Simmons and S.G. Krantz, Differential Equations, Tata McGraw Hill, 2007.
5. R. Haberman, Elementary Applied Partial Differential equations with Fourier Series and Boundary Value Problem, 4th Ed., Prentice Hall.
6. Ian Sneddon, Elements of Partial Differential Equations, McGraw Hill, 1964.
7. Manish Goyal and N.P. Bali, Transforms and Partial Differential Equations, University Science Press, Second Edition, 2010.
8. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2010.
9. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.
10. Veerarajan T., Engineering Mathematics, Tata McGraw-Hill, New Delhi, 2008.
11. P. Kandasamy, K. Thilagavathy, K. Gunavathi, Numerical Methods, S. Chand & Company, 2nd Edition, Reprint 2012.
12. S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005.
13. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.