

Mathematics-I						
Prerequisite: None			L	T	P	C
Total hours: 28			2	1	0	3
Course Content						Hrs.
Unit 1	Differential Calculus: Review of calculus of one variable and ε - δ definition, functions of several variables, Limit, Continuity, Partial derivatives, Euler's theorem on homogeneous functions, Chain rule, Jacobians, Taylor's theorem for two variables (Statement only), Error approximations.					10
Unit 2	Integral Calculus: Double and Triple integrals, Change of order of integration. Change of variables. Improper Integrals(Gamma and Beta functions).					8
Unit 3	Vector Calculus: Differentiation of vectors, gradient, directional derivative, divergence, curl and their physical meaning. Identities involving gradient, divergence and curl, Line and surface integrals, Green's, Gauss and Strokes' theorem (Statement only) and their applications					10
Text Books						
1.	Kreyszig E., Advanced Engineering Mathematics, 10th Edition, Wiley, 2011.					
2.	Hass J., Heil C. and Weir M. D., Thomas' Calculus, 14th Edition, Pearson Education, 2018.					
Reference books						
1.	Jain R. K. and Iyengar S. R. K., Advanced Engineering Mathematics, 5th Edition, Narosa Publishing House, 2016.					
2.	Zill D. G. and Wright W. S., Advanced Engineering Mathematics, 4th Edition, Viva, 2011.					
3.	O'Neil P. V., Advanced Engineering Mathematics, 8th Edition, Cengage Learning, 2017.					
4.	Grewal B.S., Higher Engineering Mathematics, 44th Edition, Khanna publishers, 2021.					

Mathematics-II					
Prerequisite: None		L	T	P	C
Total hours: 28		2	1	0	3
Course Content					Hrs.
Unit 1	Matrix Algebra: Row echelon form, Rank of a matrix, Solution of linear simultaneous equations, Eigenvalues and Eigenvectors of a matrix, Cayley- Hamilton theorem (Statement only), Diagonalization of a matrix.				8
Unit 2	Ordinary Differential Equations: Exact differential equations, Solution of second and higher order linear differential equations with constant coefficients using operator method, Cauchy-Euler equations. Reduction of order, Method of variation of parameters, Matrix method for system of linear differential equations.				8
Unit 3	Fourier Series: Fourier series and its convergence, Fourier series of even and odd functions, Fourier half-range series.				4
Unit 4	Laplace Transform: Laplace and inverse Laplace transform of some standard functions, Shifting theorems, Laplace transform of derivatives and integrals, Convolution theorem, Heaviside unit step function and Dirac delta function, Applications of Laplace transform.				8
Text Books					
1.	Kreyszig E., Advanced Engineering Mathematics, 10th Edition, Wiley, 2011.				
2.	Zill D. G. and Wright W. S., Advanced Engineering Mathematics, 4th Edition, Viva, 2011.				
Reference books					
1.	Jain R. K. and Iyengar S. R. K., Advanced Engineering Mathematics, 5th Edition, Narosa Publishing House, 2016.				
2.	Strang G., Linear Algebra and its Applications, 4 th edition, Cengage Learning, 2006.				
3.	O'Neil P. V., Advanced Engineering Mathematics, 8th Edition, Cengage Learning, 2017.				
4.	Grewal B.S., Higher Engineering Mathematics, 44th Edition, Khanna publishers, 2021.				