

B. E. Common to all Programmes Choice Based Credit System (CBCS) and Outcome Based Education (OBE) SEMESTER - III				
ADDITIONAL MATHEMATICS – I (Mandatory Learning Course: Common to All Programmes) (A Bridge course for Lateral Entry students under Diploma quota to BE/B. Tech programmes)				
Course Code	18MATDIP31	CIE Marks	40	
Teaching Hours/Week (L:T:P)	(2:2:0)	SEE Marks	60	
Credits	0	Exam Hours	03	
Course objectives: <ul style="list-style-type: none">To provide basic concepts of complex trigonometry, vector algebra, differential and integral calculus.To provide an insight into vector differentiation and first order ODE's.				
Module-1				
Complex Trigonometry: Complex Numbers: Definitions and properties. Modulus and amplitude of a complex number, Argand's diagram, De-Moivre's theorem (without proof). Vector Algebra: Scalar and vectors. Addition and subtraction and multiplication of vectors- Dot and Cross products, problems.				
Module-2				
Differential Calculus: Review of successive differentiation-illustrative examples. Maclaurin's series expansions-Illustrative examples. Partial Differentiation: Euler's theorem-problems on first order derivatives only. Total derivatives-differentiation of composite functions. Jacobians of order two-Problems.				
Module-3				
Vector Differentiation: Differentiation of vector functions. Velocity and acceleration of a particle moving on a space curve. Scalar and vector point functions. Gradient, Divergence, Curl-simple problems. Solenoidal and irrotational vector fields-Problems.				
Module-4				
Integral Calculus: Review of elementary integral calculus. Reduction formulae for $\sin^n x$, $\cos^n x$ (with proof) and $\sin^m x \cos^n x$ (without proof) and evaluation of these with standard limits-Examples. Double and triple integrals-Simple examples.				
Module-5				
Ordinary differential equations (ODE's). Introduction-solutions of first order and first degree differential equations: exact, linear differential equations. Equations reducible to exact and Bernoulli's equation.				
Course outcomes: At the end of the course the student will be able to: <ul style="list-style-type: none">CO1: Apply concepts of complex numbers and vector algebra to analyze the problems arising in related area.CO2: Use derivatives and partial derivatives to calculate rate of change of multivariate functions.CO3: Analyze position, velocity and acceleration in two and three dimensions of vector valued functions.CO4: Learn techniques of integration including the evaluation of double and triple integrals. CO5: Identify and solve first order ordinary differential equations.				
Question paper pattern: <ul style="list-style-type: none">The question paper will have ten full questions carrying equal marks.Each full question will be for 20 marks.There will be two full questions (with a maximum of four sub- questions) from each module.Each full question will have sub- question covering all the topics under a module.The students will have to answer five full questions, selecting one full question from each module.				
Sl No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
Textbook				
1	Higher Engineering Mathematics	B.S. Grewal	Khanna Publishers	43 rd Edition,

				2015
Reference Books				
1	Advanced Engineering Mathematics	E. Kreyszig	John Wiley & Sons	10 th Edition, 2015
2	Engineering Mathematics	N.P.Bali and Manish Goyal	Laxmi Publishers	7th Edition, 2007
3	Engineering Mathematics Vol.I	Rohit Khurana	Cengage Learning	1 st Edition, 2015


 H.O.D.
 Dept. of Civil Engineering
 Alva's Institute of Engg. & Technology
 Mijar, Moodbidri - 574 225