

GANPAT UNIVERSITY										
FACULTY OF U. V. PATEL COLLEGE OF ENGINEERING										
Programme		Degree Engineering				Branch/Spec.		Automobile Engineering		
Semester		IV				Version		1.0.0.0		
Effective from Academic Year				2018-19		Effective for the batch Admitted in				June 2017
Subject code		2AE401		Subject Name		Numerical Analysis				
Teaching scheme						Examination scheme (Marks)				
(Per week)		Lecture (DT)		Practical (Lab.)		Total				
		L	TU	P	TW			CE	SEE	
Credit		2	0	0	0	2	Theory	40	60	
Hours		2	0	0	0	2	Practical	0	0	
Pre-requisites:										
None										
Theory syllabus										
Unit		Content							Hrs	
1		Numerical Integration Composite rules, Error formulae, Gaussian integration							6	
2		Linear Algebraic Equation Solution of a system of linear equations: Implementation of Gaussian elimination and Gauss-Seidel methods, Partial pivoting							8	
3		Roots of equation Solution of a nonlinear equation: Bisection and Secant methods, Newton's method, Rate of convergence, Power method for computation of Eigen values							8	
4		Ordinary Differential Equations Numerical solution of ordinary differential equations, Euler and Runge Kutta methods							5	
Practical content										
Text Books										
1		S. S. Rattan, "Theory of machines", Tata McGraw-Hill Education, 3rd Edition								
2		J.S. Rao and R. V. Dukkipatti, "Mechanisms & Machine Theory", New age international publication, 2nd Edition.								
Reference Books										
1		C. S. Sharma, Kamlesh Purohit, "Theory of Mechanisms and Machines", PHI Learning Pvt. Ltd., 2nd Edition.								
2		Sadhu Singh. "Theory of Machines", Pearson publication, 3rd Edition								
ICT/MOOCs References										
https://www.youtube.com/watch?v=hizXlwJO1Ck						Numerical Integration				
https://www.youtube.com/watch?v=LJ-LoJhbBA4&list=PLbMVogVj5nJQ2vsW_hmyvVfO4GYWaaPp7						Linear Algebra				
https://www.youtube.com/watch?v=o9MUMIWA5IE						Newton's Method				
https://www.youtube.com/watch?v=aZMAItFy0kE						Roots of equation				
https://www.youtube.com/watch?v=NBcGLLU90fM&list=PLbMVogVj5nJSGlf9sluucwobyzz6gID						Ordinary Differential Equations				
Learning Outcomes										
COs		Description								
CO1		Understand importance and applications of numerical methods								
CO2		Solving examples using numerical methods								
CO3		Apply mathematics in engineering problems.								