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		CE	SEE	Total
	L	TU	P	TW					
Credit	2	0	0	0	2	Theory	40	60	100
Hours	2	0	0	0	2	Practical	0	0	0

Pre-requisites:

None

Learning Outcome:

Learning Outcomes:

After completion of this course, student will be able to

- Calculate finite differences of tabulated data.
- Find an approximate solution of algebraic equations using appropriate method.
- Find an Eigen value using appropriate iterative method.
- Find an approximate solution of ordinary differential equations using

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