

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Bachelor of Technology			Branch/Spec.		ALL		
Semester		I			Version		2.0.0.0		
Effective from Academic Year			2018-19		Effective for the batch Admitted in			July 2018	
Subject code		2BS101		Subject Name		Mathematics-I			
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	03	01	--	--	04	Theory	40	60	100
Hours	03	01	--	--	04	Practical	--	--	--
Pre-requisites:									
Basic knowledge of Differentiation and Integration									
Learning Outcome:									
After successful completion of the course, student will be able to									
<ul style="list-style-type: none"> <li>Understand mathematical basic preliminaries.</li> <li>Express physical phenomenon in mathematical formulation.</li> <li>Apply Differential &amp; Integral Calculus in formal representation of various computing constructs.</li> <li>Recognize the importance of mathematics for analysis in engineering problems.</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
1.	<b>Differential Calculus :</b> Review of the prerequisites such as limits of sequences and functions, continuity, uniform continuity and differentiability. Successive differentiation, Leibniz's theorem (without proof), Taylor's & Maclaurin's expansions of single variable, Rolle's theorem, Mean value theorems, Indeterminate forms.								12
2.	<b>Partial differentiation and its applications :</b> Partial and total differential coefficient, Euler's theorem, Transformations, Geometrical interpretation of partial derivatives, Tangent plane and Normal line, Jacobians, Taylor's expansion for two variables, Errors and approximations, Maxima and Minima of functions of two variables ,Lagrange method of undetermined multipliers to determine stationary values.								11
3.	<b>Integral Calculus :</b> Reduction Formulae: Reduction formulae of the type $\int \sin^n x dx$ , $\int \cos^n x dx$ , $\int \sin^m x \cos^n x dx$ , $\int \tan^n x dx$ and $\int \cot^n x dx$ . Beta & Gamma function, Error function, Elliptic integrals. Application of integration- Length of a curve, Area of a bounded region, volume & surface area of a solid of revolution for Cartesian, parametric & polar form.								12
4.	<b>Multiple integrals :</b> Double integral, change of order of integration, transformation of variables by Jacobian only for double integration, change into polar co-ordinates in double integrals only, Triple integral, Application of multiple integration to find areas, volumes, C.G., M.I. and mean values.								11
								TOTAL	46
<b>Practical content</b>									
<b>Text Books</b>									
1.	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.								
2.	G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.								
<b>Reference Books</b>									
1.	Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.								
2.	Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.								
3.	N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2010.								