

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Bachelor of Technology			Branch/Spec.		Civil		
Semester		III			Version		2.0.0.0		
Effective from Academic Year			2019-20		Effective for the batch Admitted in			July 2018	
Subject code		2HS305		Subject Name		Mathematics for Civil Engineering			
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	03	00	00	00	03	Theory	40	60	100
Hours	03	00	00	00	03	Practical	00	00	00
Pre-requisites:									
Learning Outcome:									
After successful completion of the course, student will be able to:									
<ul style="list-style-type: none"> <li>Understand Basics of engineering Properties and different materials.</li> <li>Get knowledge of different types of stress like bending stress shear stress under different loading condition.</li> <li>Understand behaviour of compression member (column and strut).</li> </ul>									
Theory syllabus									
Unit	Content								Hrs
1.	<b>Laplace Transforms:</b> Definition, Laplace transform of elementary functions, Properties of Laplace transform, Inverse Laplace transform, transform of derivatives, Transform of integration, Multiplication by $t^n$ , Division by $t$ , Convolution theorem, Unit step and Heaviside's unit function, directdelta function, periodic functions, Solution of ordinary linear differential equations, Simultaneous equation with constant co-efficient applied to electrical circuits.								10
2.	<b>Fourier Series:</b> Definition of periodic function, Euler's formula, Functions having points of discontinuity, Change of intervals, Odd and Even functions, Expansion of odd or even periodic functions, Half range sine and cosine series, Elements of harmonic analysis.								10
3.	<b>Ordinary Differential Equation (Higher Order) :</b> Ordinary differential equation with constant coefficient, Variation of parameter methods, Cauchy – Euler differential equations, Simultaneous differential equations with constant coefficient, Applications of ordinary differential equation.								10
4.	<b>Partial Differential Equation:</b> Formation of partial differential equations, LaGrange's first order partial differential equations, Directly integral equations, Method of separable of variables, Application to wave equations, Diffusion equation and Laplace equation.								10
5.	<b>Statistics:</b> Total probability, independent events, Theorem of compound probability, Baye's theorem random variable, Discrete probability distribution, Continuous probability distribution expectation, Moment generating function, Repeated trials, Binomial Poisson's and normal distribution applications, Calculation of errors, probable errors, standard error.								5
TOTAL								45	
<b>Text Books</b>									
1.	B.S.Grewal ,Higher engineering mathematics, Khanna Publishers.								
2.	M.D.Raisinghania, Textbook of Ordinary and Partial Differential Equations, S.Chand.								
<b>Reference Books</b>									
1.	Srivastava, Engineering mathematics. PHI Learning Pvt. Ltd.								
2.	A.B.Mathur and V.P.Jaggi. ,Textbook of engineering mathematics ,Khanna Publishers								
3.	Erwin Kreyzing, Advanced engineering mathematics, John Wiley & Sons.								
<b>ICT/MOOCs</b>									
1.	<a href="https://nptel.ac.in/courses/111105035/22">https://nptel.ac.in/courses/111105035/22</a>								
2.	<a href="https://nptel.ac.in/courses/111105035/27">https://nptel.ac.in/courses/111105035/27</a>								

3.	<a href="https://nptel.ac.in/courses/111105035/30">https://nptel.ac.in/courses/111105035/30</a>
4.	<a href="https://nptel.ac.in/courses/111104031/8">https://nptel.ac.in/courses/111104031/8</a>
5.	<a href="https://nptel.ac.in/courses/111104031">https://nptel.ac.in/courses/111104031</a>
6.	<a href="https://nptel.ac.in/courses/111103021">https://nptel.ac.in/courses/111103021</a>