Programme: B.Sc. Degree Class: B.Sc.	Year: II	Semester: III

Subject: Mathematics

Course Code: **Course Title: Laplace and Fourier Transforms**

Course Outcome	**CO1:** Describe the ideas of Fourier and Laplace Transforms and indicate their applications. **CO2:** Use Fourier series for solving boundary value problems. **CO3:**Solve differential equations with initial conditions using Laplace transform.

Unit No.	Course Content	Hours
I	Laplace transforms of some standard functions, Existence conditions for theLaplace transform Shifting theorems, Laplace transform of derivatives andintegrals, Laplace transform of periodic functions, error functions, Heaviside unitstep function and Dirac delta function.	8
II	Inverse Laplace transforms and their properties, Shifting theorems, Inverse Laplacetransform of derivatives and integrals, Heaviside expansion theorem, Convolutiontheorem.	8
III	Applications of Laplace transform to solve Ordinary and Partial differentialequations, Applications of Laplace transform to solve integral equations.	8
IV	Fourier series: Trigonometric Fourier Series and its convergence, Fourier series ofeven and odd functions, Gibbs phenomenon, Fourier half-range series, Parseval'sidentity, Complex form of Fourier series.	8
V	Fourier Transforms: Fourier integrals, Fourier sine and cosine transforms and theirproperties Fourier transform of derivatives and integrals, Convolution theorem,Application of Fourier transforms to Boundary Value Problems.	8

Suggested Readings:

1. E. Kreyszig. Advance Engineering Mathematics, John Wiley& Sons.2011.
2. R.K. Jain and S.R.K. lyenger, Advanced Engineering Mathematics, Narosa Publishing
3. House, 2009.
4. F. B. Hildebrand, Methods of Applied Mathematics, Courier Dover Publication, 1992.
5. L. Debanth and D. Bhatta, Integral Transforms and their Applications. 2 nd Ed. Taylor and
6. Francis Group, 2007.Suggested digital platform: NPTEL/SWAYAM/MOOCS

Mapping of course outcomes with program outcomes & program specific outcomes

CO's No.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	3	3	3	1	2	3	3	2	3
CO2	3	3	3	1	2	3	3	2	3
CO3	3	3	3	1	2	3	3	2	3