Devi Ahilya University, Indore, India Institute of Engineering & Technology				MSc – I Year (Applied Mathematics) with Specialization in Computing & Informatics Semester- III			
Subject Code & Name	**Instructions Hours per Week**			**Credits**			
AM3GE2: Integral Transforms	**L**	**T**	**P**	**L**	**T**	**P**	**Total**
	3	**1**	**-**	**3**	**1**	**-**	**4**
Duration of Theory Paper: 3 Hours							

Objective: To study various types of integral transforms and their applications.
Prerequisites: Basics of Calculus.

COURSE OF CONTENTS

UNIT I
Laplace transforms: Definitions, properties, Laplace transforms of some elementary functions, Convolution Theorem, Inverse Laplace transformation.

UNIT II
Fourier transforms: Definitions, Properties, Fourier transforms of some elementary functions, Convolution theorems, Fourier transform as a limit of Fourier Series.

UNIT III
Application of Laplace Transform to differential equations, Application of Laplace Transform to integral equation, Application of Laplace Transform to initial and Boundary Value Problems. Application of Fourier Transform to initial and Boundary Value Problems, Finite Fourier Sine and Cosine Transform, Inversion, Operational properties Fourier transform.

UNIT IV
Hankel's Transform: Definition, properties, Parseval's theorem, Finite Hankel's transform, Application of Hankel's transform in initial and boundary value problems.

UNIT V
Mellin's Transform: Definition, Mellin's Inversion theorem, properties, Convolution theorem.

BOOKS RECOMMENDED:
[1] Sneddon I., The Use of Integral Transforms, Tata McGraw Hill, 1979.
[2] Murray R. Spiegel, Laplace Transforms Schaum's Outline Of Theory and Problems Of Laplace Transforms, 1965.
[3] Ram P Kanwal, Linear Integral Equations, Academic Press, 1971.
[4] A. R. Vasishtha and R.K. Gupta, Integral Transforms, Krishna Prakashan Media Ltd, Meerut, India, 2000.
[5] J.K. Goyal and K. P. Gupta, Integral Transforms, Pragati Prakashan, Meerut, India, 2013.