

MT-511	Advanced Engineering Mathematics
	<p><u>Perturbation Theory and Asymptotic Approximations:</u> Perturbation theory for algebraic equations, Regular perturbation theory (power series) and its shortcomings, Asymptotic and uniformity, Stretched-time and two-time methods, WKB phase-integral, Liouville (Green) approximation, Boundary-layer problems.</p> <p><u>Partial Differential Equations and Fourier Methods:</u> Introduction to PDEs and boundary-value problems, Heat equation, Basic PDE concepts, Linearity and homogeneity, Separation of variables and Fourier series, Fourier transforms, Sturm Liouville problems and special functions, Linear wave equation, Types of PDEs (parabolic, hyperbolic, elliptic), Well-posed problems.</p> <p><u>Reference Books:</u></p> <ol style="list-style-type: none">1. Zill D.G, Wright W.S, <i>Advanced Engineering Mathematics</i>, 4th Edition, Jones & Bartlett, 2009.2. Bender C.M and Steven A.O, <i>Advanced Mathematical Methods for Scientist and Engineers: Asymptotic Methods & Perturbation theory</i>, 1st Edition, Springer, 2010.