

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
PROFORMA FOR MODIFIED COURSE

1.	Title of the Course	Mathematics for Engineers
2.	Course Number	MA5101
3.	Status of the Course	Elective
4.	Structure of Credits	3-1-0-4
5.	Offered To	PG
6.	New Course/Modification to	Modification to MA5101
7.	To be Offered by	Dr. S Rajesh & Dr. Durga Prasad Challa
8.	To take effect from	January 2018
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: To study some properties of matrices, diagonalization of matrices, the power series solutions to second order differential equations, Sturm-Liouville problem, wave and heat equations in 1-dim and 2-dim and also to study Laplace's equations in 2-dim and 3-dim.	
12.	<p>Course Content: System of linear equations, linear dependence, linear independence, inner product spaces, Gram-Schmidt orthogonalization, eigen values, eigen vectors, diagonalization of symmetric and Hermitian matrices.</p> <p>Linear equations, variation of constants formula, Sturm-Liouville boundary value problems, Power Series solutions, Legendre and Bessel's functions, Fourier series and Fourier integrals.</p> <p>1-D and 2-D Wave and Heat equations with initial and Boundary conditions, 2-D and 3-D Laplace's equations with circular and Spherical symmetry.</p>	
13.	Text book(s): 1. E. Kreyszig, <i>Advanced Engineering Mathematics</i> , John Willey & Sons, (2010).	
14.	Reference(s): 1. T. Amarnath, <i>An Elementary Course in Partial Differential Equations</i> , Jones & Bartlett Learning, (2009). 2. C. Ray Wylie, <i>Advanced Engineering Mathematics</i> , McGraw-Hill Higher Education, (1995).	