

MAT 572- Advanced Engineering Mathematics I

Course Code:	MAT-572
UTAA Credit (Theoretical-Laboratory hours/week):	3(3-0)
ECTS Credit:	6-0
Department:	Mechanical and Aeronautical Engineering
Language of Instruction:	English
Level of Study:	Graduate
Offered Semester:	Fall and Spring Semesters.

Course Objectives

Provide graduate students with the advanced analytical methods. It will be bases for their research areas

Course Content

Matrices and system of linear equations, eigenvalue problems, ordinary differential equations, series solution, special functions, partial differential equations: elliptic, parabolic and hyperbolic equations, separation of variables, Laplace transforms, Fourier transforms, Green's function, perturbation methods.

Course Learning Outcomes

1-A sound understanding of the matrices and ability solve system of various algebraic equations.

2-A sound understanding of the important special functions and their use in the solution of engineering problems.

3-Ability to solve nonlinear ODEs via series solution methods.

4-Ability to employ the separation of variables to solve partial differential equations.